

Environmental Assessment

DOI-BLM-NV-W010-2012-0032-EA

Pueblo Mountain Grazing Allotment Permit Renewal



February 2015

Prepared by:

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1.0 INTRODUCTION

1.1 Identifying Information

Title: Pueblo Mountain Allotment Grazing Permit Renewal

EA #: DOI-BLM-NV-W010-2012-0032-EA

Type of project: Grazing Permit Renewal

Location of Proposed Action: Pueblo Mountain Allotment

Name and Location of Preparing Office:

Winnemucca District BLM
Humboldt River Field Office
5100 E. Winnemucca Blvd.
Winnemucca, NV 89445

Permittee #: 2703981

Applicant Name: Moser Ranch, LLC

1.2 Project Overview

The Winnemucca District Bureau of Land Management (BLM) is evaluating an application for renewal of a ten-year grazing permit on the Pueblo Mountain Allotment. This environmental assessment (EA) for the grazing permit renewal was developed by the BLM through consultation, cooperation and coordination amongst BLM, Moser Ranch, LLC, and United States Fish and Wildlife Service (Service). In addition to the consultation, cooperation and coordination, a monitoring report was completed that summarized the data collected from 2000 to 2012. Oregon Department of Fish and Wildlife (ODFW) received a copy of the preliminary environmental assessment (PEA). A land health assessment (LHA) was completed for the allotment in 2012. The data from the monitoring report and LHA helped determine what allotment objectives and standards are being met as well as which ones are not. Through multiple meetings with these entities, the proposed action and alternatives were developed for analysis and consideration.

The Pueblo Mountain Allotment is located approximately 100 miles north of Winnemucca, Nevada, starting between Denio Summit and the State Route 140/292 junction and going north to encompass part of the Pueblo Mountain Wilderness Study Area (WSA) (Refer to map 1 and map 2: location of Pueblo Mountain Allotment). The western border runs near to the Sheldon National Wildlife Refuge while the eastern boundary runs up the Pueblo Valley. The allotment is approximately 36,545 acres, of which 33,648 is public land, and 2,897 acres are private.

This EA contains the site-specific analysis of potential impacts that could result with the implementation of a proposed action or alternatives to the proposed action. The EA ensures compliance with the National Environmental Policy Act (NEPA), analyzes information to determine whether to prepare an environmental impact statement (EIS) or issue a “Finding of No Significant Impact” (FONSI). A FONSI documents why implementation of the selected action would not result in environmental impacts that would significantly affect the quality of the human environment.

1.3 Purpose and Need for Action

The purpose of the federal action is to ensure an appropriate grazing system and terms and condition are developed that meet the standards for rangeland health (SRH) and allotment specific objectives.

The need for the federal action is established by the BLM’s responsibility under the Taylor Grazing Act (TGA) of 1934 and the Federal Land Policy and Management Act of 1976 (FLPMA) to respond to a request for a ten-year grazing permit renewal for the Pueblo Mountain Allotment and ensure progress towards meeting the SRH.

1.4 Decision to be Made

The decision to be made is whether or not to renew the ten-year grazing permit and if so, under what grazing system and terms and conditions.

1.5 Conformance

The proposed action is in conformance with the BLM’s Paradise-Denio Management Framework Plan, 1982, MFP III decisions and objectives including the following:

- Objective RM-1: To provide forage on a sustained yield basis through natural regeneration. Reverse the downward deterioration of public grazing lands by improving 1,000,000 acres in poor condition and 400,000 acres in fair condition to good condition within 30 years.
- Objective WL-1: Improve and maintain a sufficient quantity, quality and diversity of habitats for all species of wildlife in the planning area.
- Objective W-1: Preservation and improvement of quality water necessary to support current and future use.
- Objective W-2: Provision of adequate water to support public land uses.
- Objective W-3: Reduction of soil loss and associated flood and sediment damage from public lands caused by accelerated erosion (man-induced) from wind and water.

After a review of the policy and allotment issues the Pueblo Mountain Allotment has been retained as an “M” allotment for current management purposes. An “M” allotment constitutes a moderate priority for management as determined from an analysis of five criteria: range condition, resource potential, presence of resource-use conflicts or controversy, opportunity for positive economic return on public investment, and the present management situation.

1.6 Relationship to Laws, Regulations, and Other Plans

Laws and Regulatory Authorities

- Taylor Grazing Act of 1934 as amended and supplemented
- Federal Land Policy and Management Act of 1976
- Public Rangelands Improvement Act of 1978
- 43 CFR Part 4100 et al – Grazing Administration
- Endangered Species Act of 1973

Relevant Policy

Decisions Affecting Greater Sage Grouse (Instruction Memorandum N0. 2012-0430)

As summarized in the BLM's National Strategy, emphasis for protecting and managing greater sage-grouse habitat incorporates the following principles:

1. Protection of un-fragmented habitats;
2. Minimization of habitat loss and fragmentation; and
3. Management of habitats to maintain, enhance, or restore conditions that meet greater sage-grouse life history needs.

To provide guidance to field offices about how to promote these principles, this IM transmits policies and procedures that apply to ongoing and proposed BLM actions, including use authorizations, within preliminary priority habitat (PPH) and preliminary general habitat (PGH). PPH comprises areas that have been identified as having the highest conservation value to maintaining sustainable greater sage-grouse populations. These areas would include breeding, late brood-rearing, and winter concentration areas. These areas have been identified by the BLM in coordination with respective state wildlife agencies. PGH comprises areas of occupied seasonal or year-round habitat outside of priority habitat. These areas have been identified by the BLM in coordination with respective state wildlife agencies.

The policies and procedures identified in this IM are designed to minimize habitat loss in PPH and PGH and will advance the BLM's objectives to maintain or restore habitat to desired conditions by ensuring that field offices analyze and document impacts to PPH and PGH and coordinate with states and the Service when issuing decisions.

Standards and Guidelines for Rangeland Health

The primary laws that govern grazing on public lands are the Taylor Grazing Act of 1934, the Federal Land Policy and Management Act of 1976, and the Public Rangelands Improvement Act of 1978. The BLM manages grazing lands under 43 CFR Part 4100 and BLM Handbooks 4100-4180, and it conducts grazing management practices through BLM Manual H-4120-1 (BLM 1984). In addition, the BLM must meet or ensure progress is being made toward meeting the Sierra Front-Northwestern Great Basin RAC Standards and Guidelines for Rangeland Health for each allotment. The Pueblo Mountain Allotment occurs in Nevada and Oregon thus this

allotment is evaluated under both the Sierra Front-Northwestern Great Basin Resource Advisory Council and South East Oregon Resource Advisory Council Standards and Guidelines for Rangeland Health.

Standards and Guidelines Pertinent to the Nevada Portion of Pueblo Allotment

The recommendations presented in the SRH as developed in consultation with the Sierra Front-Northwestern Great Basin Resource Advisory Council and other interested publics, and approved by the Secretary of the Interior on February 12, 1997 are relevant to the Nevada portion of the allotment:

1. Soil processes will be appropriate to soil types, climate and land form.
2. Riparian/wetland systems are in proper functioning condition.
3. Water quality criteria in Nevada or California State Law shall be achieved or maintained.
4. Populations and communities of native plant species and habitats for native animal species are healthy, productive and diverse.
5. Habitat conditions meet the life cycle requirements of special status species.

These Standards and Guidelines reflect the stated goals of maintaining or improving rangeland health while providing for the viability of the livestock industry in the Sierra Front – Northwestern Great Basin Resource Area.

The terms and conditions of the permit will be modified if additional information indicates that revision is necessary to conform to 43 CFR 4180 as supplemented by the Sierra Front - Northwestern Great Basin Resource Advisory Council Standards for rangeland health and Guidelines for Grazing Management.

Standards and Guidelines Pertinent to the Oregon Portion of Pueblo Allotment

The recommendations presented in the Standards and Guidelines for Rangeland Health (SRH) as developed in consultation with the South East Oregon Resource Advisory Council, other interested publics and approved by the Secretary of the Interior on August 12, 1997, are relevant to the Oregon portion of the Pueblo Allotment.

1. Upland soils exhibit infiltration and permeability rates, moisture storage and stability that are appropriate to soil, climate and landform.
2. Riparian-wetland areas are in properly functioning physical condition appropriate to soil, climate, and landform
3. Healthy, productive and diverse plant and animal populations and communities appropriate to soil, climate and landform are supported by ecological processes of nutrient cycling, energy flow and the hydrologic cycle.
4. Surface water and groundwater quality, influenced by agency actions, complies with state water quality standards.
5. Habitats support healthy, productive and diverse populations and communities of native plants and animals (including special status species and species of local importance) appropriate to soil, climate and landform.

1.7 Scoping, Public Involvement and Issues

On March 8, 2012, a scoping letter was sent to the Pueblo Mountain Allotment interested public mailing list inviting comments. The BLM considered all comments received in determining the scope of this analysis. Based on internal and external scoping of the proposal, a list of issues was identified and listed in Table 1.

Table 1: Issues

Scoping Topic
Cultural Values
How would livestock grazing affect significant cultural resources?
Invasive, Nonnative Species
How would livestock grazing impact the presence or distribution of invasive, non-native, and/ or noxious weeds?
Migratory Birds
How would livestock grazing affect nesting habitat for sensitive and non-sensitive migratory birds?
Native American and Religious Concerns
Are there Native American Religious Concerns relative to the proposal?
Threatened and Endangered Species
How would livestock grazing impact LCT habitat along Denio Creek?
Water Quality (Surface and Ground)
How would livestock grazing affect water quality?
Wetlands and Riparian Zones
How would livestock grazing affect wetlands and riparian vegetation communities?
Fisheries
See Threatened and Endangered Species.
Land with Wilderness Characteristics
How would livestock grazing affect lands with wilderness characteristics?
Paleontology
How would livestock grazing affect paleontological resources?
Social and Economic Values
How would the renewal of the permit affect the social and economic values?
Soil Resources
How would cattle grazing alter the rate of wind or water erosion of soils and biological soil crusts?
Special Status Species
How would cattle grazing affect greater sage-grouse winter, lekking, nesting, and brood rearing habitat?
How would cattle grazing affect sensitive plant species such as Dainty moonwort and Pueblo Valley peppergrass?
How would cattle grazing in the Baltazor Hot Springs and Pueblo Slough area affect the larval host plants and nectar plant species for the bleached sandhill skipper?
How would cattle grazing affect the yellow-billed cuckoo nesting habitat?
How would cattle grazing affect Columbia spotted frog populations and their habitat?

How would cattle grazing affect pygmy rabbit populations and their habitat?

How would cattle grazing affect other sensitive and non-sensitive wildlife species populations and habitat?

Vegetation Communities

How would livestock grazing affect vegetation communities?

Wilderness Study Areas

How would livestock grazing affect wilderness study areas?

Wildlife

How would livestock grazing affect general wildlife?

2.0 PROPOSED ACTION AND ALTERNATIVES

Four alternatives were developed to evaluate the renewal of the grazing permit. The No Action Alternative would mean continuation of the current grazing system under the terms and conditions of the 1999 Final Multiple Use Decision (FMUD). This alternative is being brought forward for a detailed analysis to provide a baseline to compare action alternatives. The proposed action was developed by the BLM through cooperation and coordination with the permittee and other state and federal agencies. This alternative would aid in attainment of SRH and Guidelines for riparian-wetland Proper Functioning Condition (PFC) and habitat conditions to meet the life cycle requirements of special status species. The Denio Creek Exclosure Alternative was proposed to the BLM by the permittee. It would involve building an exclosure fence around the portion of Denio Creek that flows through the Pueblo Mountain pasture. Under the Maximum Reduction Grazing Alternative livestock grazing would be suspended for a ten year period.

The following subsections describe in detail the No Action, Proposed Action, Denio Creek Exclosure Alternative, and the Maximum Reduction Alternative.

2.1 No Action Alternative

The no action would mean continuation of the current grazing system under the terms and conditions from the 1999 FMUD. Current permitted numbers of livestock would be allowed to graze the allotment from April 1 to August 30, and again from October 1 to January 8. The current grazing system and associated terms and conditions are identified in table 2.1. While the no action in itself does not meet the purpose and need for federal action because it is not meeting allotment specific riparian objectives or all the SRH within the Pueblo Mountain pasture, it is being described here and carried through a detailed analysis for two reasons. First; the no action alternative provides a baseline from which to compare other action alternatives and two; if it were to be selected for implementation in conjunction with the Denio Creek exclosure alternative, it would meet the purpose and need for federal action.

Table 2.1: Pasture Rotation according to 1999 FMUD

Pasture	Year 1	Year 2	Year 3
Cowden	04/01-05/31	08/01-08/31; 10/01 - 01/08	REST
Black Mountain	08/16-08/31; 10/01-01-/08	REST	04/01 – 05/31
Chokecherry	REST	04/01-05/31	08/16 – 08/31; 10/01 – 01/08
Continental	07/16 – 08/15	REST	07/16 – 08/15
Alberson Basin	06/01-06/22	06/23 – 07/31	REST
Denio Basin	06/23-07/15	REST	06/23 – 07/15
Pueblo Mountain	REST	06/01 – 06/22	06/01 – 06/22

Terms and Conditions (per 1999 FMUD)

1. Salt and/or mineral blocks shall not be placed within one quarter (1/4) mile of springs, streams, meadows, riparian habitats, or aspen stands
2. The permittee is required to perform normal maintenance on the range improvements as per the signed cooperative agreements/permits prior to turning out into respective pastures
3. The permittee certified actual use report by pasture is due 15 days after the end of the authorized grazing period
4. The terms and conditions of this grazing permit must be in conformance with the Standards and Guidelines for the Sierra Front-Northwestern Great Basin Resource Advisory Council Area, approved by the Secretary of the Interior on February 12, 1997 and the Southeast Oregon Resource Advisory Council Area, approved on August 8, 1997
5. Pursuant to 43 CFR 10.4(g) the holder of this authorization must notify the authorized officer, by telephone, with written confirmation, immediately upon the discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony (as defined at 43 CFR 10.2). Further, pursuant to 43 CFR 10.4 (c) and (d), you must stop activities in the immediate vicinity of the discovery and protect it from your activities for 30 days or until notified to proceed by the authorized officer
6. Livestock grazing turnout and removal dates may be modified by up to two weeks. A modified turnout date into a pasture will be dependent on range readiness factors such as stage of plant growth, soil moisture, moisture in meadows, and would require the area to be inspected prior to turnout. An early turnout date would be followed by an early removal date at the end of the grazing period. A later turnout date will be considered in years that are colder, wetter, and both upland and riparian vegetation has little to no growth. In the event of a late turn out date, a later removal date can also be considered, so long as stocking rate levels identified for the pastures will not be exceeded. Livestock grazing turn out and removal dates may be modified by up to two weeks. This flexibility will facilitate livestock into a pasture without having a detrimental effect on uplands, streambank riparian and wetland riparian habitats and corresponds with range readiness
7. If bank damage exceeds 10% of total creek length in the pasture and livestock causes a majority of the bank damage on Denio Creek in the Pueblo Mountain or Denio Basin pastures during the use period of 6/23 – 7/15, they will either be moved to the next scheduled pasture or to the Moser's private field located in the Denio Basin pasture.
8. The permittee will conduct the following livestock management actions to facilitate livestock utilization of upland forage in the Denio Basin and Pueblo Mountain pastures:
 - a. The cattle will be withheld from salt for at least 10 days prior to movement into the Denio Basin and Pueblo Mountain pastures
 - b. Prior to cattle being moved into the Denio Basin and Pueblo Mountain pasture, the permittee will place salt at upland locations, as far away as practical from the Denio Creek riparian area
 - c. Those cattle which are persistent in their use of the Denio Creek riparian area will be removed individually and placed in the permittee's private pasture

Short-term objectives:

1. The objective for key plant species (*Carex*, *Juncus*) on streambank riparian habitats is 5 inches stubble height by October
2. The objective for utilization of key plant species (STTH2, AGSP, FEID, SIHY, ELCI) on upland habitats is 50%

Long-term objectives:

1. Manage, maintain and improve public rangeland conditions to provide forage on a sustained yield basis for big game with an initial forage demand of 84 AUMs for mule deer
 - a. Improve to or maintain 6,948 acres in Pueblo Mountains DY-16 (Deer Yearlong), 2,288 acres in Pine Forest DW-7 (Deer Winter) and 4,077 acres in Pine Forest DY-7, in good or excellent mule deer habitat condition.
2. Manage, maintain and improve public rangeland conditions to provide forage on a sustained yield basis for livestock, with an initial stocking level of 2069 AUMs.
3. Improve to or maintain 115 acres of mountain mahogany habitat types in good condition by allowing for successful reproduction and recruitment in the stand
4. Improve to or maintain the following stream habitat conditions on Denio Creek at 60% or above
 - a. Streambank cover of 60% or above
 - b. streambank stability of 60% or above
 - c. Maximum summer water temperatures below 68° F.
5. Improve or maintain suitable sage-grouse strutting, nesting, brood rearing, and/or wintering habitat in good condition
6. The following parameters have been found to constitute optimum (good) conditions for sage-grouse use:
 - a. Strutting habitat
 - i. Sagebrush between 7 and 31 inches in height (optimum = 16 inches)
 - ii. Sagebrush canopy cover of 15-30% (optimum = 27%)
 - iii. 25-35% basal ground cover
 - iv. Average understory height of 6-7 inches
 - b. Brood rearing habitat
 - i. Early Season
 1. Sagebrush canopy cover of 10-21% (optimum = 14%)
 - ii. Late Season
 1. Meadow areas that are in proper functioning condition
 2. Residual meadow vegetation of no less than 3-6 inches
 - iii. Winter habitat
 1. Greater than 20% sagebrush canopy cover
7. Improve or maintain state water quality standards for Denio Creek
8. Improve to or maintain 93 acres of riparian meadow habitat types to ensure species diversity and quality, and maximizing reproduction and recruitment of woody riparian species.

2.2 Proposed Action

The proposed action was developed by the BLM for analysis and consideration through consultation, cooperation and coordination between the BLM, Moser Ranch, LLC, and the Service. This alternative was developed to address the habitat and riparian PFC concerns identified in the Pueblo Mountain pasture by providing complete rest every other year for this pasture. In addition, a modified grazing schedule has been developed to address concerns within the Continental and Denio Basin pastures. Cattleguards are proposed to replace gates within the Pueblo Mountain pasture and modifications to the terms and conditions for the permit are proposed.

A ten-year permit would be issued in which the livestock numbers, seasons of use, and AUMs for the Pueblo Mountain Allotment would be as described in table 2.2.

Table 2.2: Description of grazing permit for the Pueblo Mountain Allotment proposed action

Permittee	# Livestock	Dates	% Public Land	AUMs
Moser Ranch, LLC	258 Cattle	04/01 – 8/30	92.1	1289
	258 Cattle	10/01 – 01/08	92.1	848
			Total	2,137

The Pueblo Mountain Allotment has seven pastures in a rest rotation system (table 2.3). The proposed action allows use within the Pueblo Mountain and Denio Basin pastures on an every other year basis. This means that for every year that they are used for three weeks they will receive a year of rest (Refer to map 3: Proposed Action Grazing System). The proposed action would allow for use within the Pueblo Mountain pasture beginning in 2016 and every even year after that. Rest would occur during the odd years of the permit, beginning in 2015. The Alberson Basin pasture would be used every year but not at the same time of year. On odd years this pasture would be used for the first three weeks of June. On even years it would be used for the last week of June and the first two weeks of July. The Denio Basin pasture would be used every other year. It would be used on odd years for the last week of June and the first two weeks of July. Rest would occur during the even years of the permit, beginning in 2016. The Cowden, Black Mountain and Chokecherry pastures would all be used for two years and rested one year. Grazing would begin in either October or November, depending on what season the Continental pasture was used. The Continental pasture would be grazed from mid-July to mid-August or from October 1 to October 31.

For each year of grazing, the summer pastures would receive 21 days of use. The Continental pasture would receive 30 days of use either from mid-July to mid-August or during the month of October. Season of use for this pasture would be coordinated with the BLM. If the Continental pasture was used for the month of October, use for the next winter pasture would begin on November 1. If professional observation or observations by the permittee of stubble height, upland utilization, and/or bank alteration determined that allotment objectives have been met before the allotted time had ended, permittee would stop grazing of that pasture and either move to the next pasture in the rotation or remove livestock from the allotment. BLM would be

notified of any changes in rotation schedule. The proposed ten-year grazing system is described in table 2.4.

Table 2.3: Pastures within Pueblo Mountain Allotment

Spring Pastures	Summer Pastures	Winter Pastures
Black Mountain	Alberson Basin	Black Mountain
Cowden	Continental	Cowden
Chokecherry	Denio Basin	Chokecherry
	Pueblo Mountain	

Table 2.4: Proposed Rest-Rotation Grazing System

Pasture	Year 1 (2015)	Pasture	Year 2 (2016)
Cowden	4/1-5/31	Black Mountain	4/1-5/31
Alberson Basin	6/1-6/21	Pueblo Mountain	6/1-6/21
Denio Basin	6/22-7/15	Alberson Basin	6/22-7/15
Continental	7/16-8/15 or 10/1-10/31	Continental	7/16-8/15 or 10/1-10/31
Chokecherry	10/1-1/08 or 11/1 – 1/08	Cowden	10/1-1/08 or 11/1 – 1/08
Pueblo Mountain	REST	Denio Basin	REST
Black Mountain	REST	Chokecherry	REST

Pasture	Year 3 (2017)	Pasture	Year 4 (2018)
Chokecherry	4/1-5/31	Cowden	4/1-5/31
Alberson Basin	6/1-6/21	Pueblo Mountain	6/1-6/21
Denio Basin	6/22-7/15	Alberson Basin	6/22 -7/15
Continental	7/16-8/15 or 10/1-10/31	Continental	7/16-8/15 or 10/1-10/31
Black Mountain	10/1-1/08 or 11/1 – 1/08	Chokecherry	10/1-1/08 or 11/1 – 1/08
Pueblo Mountain	REST	Denio Basin	REST
Cowden	REST	Black Mountain	REST

Pasture	Year 5 (2019)	Pasture	Year 6 (2020)
Black Mountain	4/1-5/31	Chokecherry	4/1-5/31
Alberson Basin	6/1-6/21	Pueblo Mountain	6/1-6/21
Denio Basin	6/22-7/15	Alberson Basin	6/22-7/15
Continental	7/16-8/15 or 10/1-10/31	Continental	7/15-8/15 or 10/1-10/31
Cowden	10/1-1/08 or 11/1-1/08	Black Mountain	10/1-1/08 or 11/1-1/08
Chokecherry	REST	Cowden	REST
Pueblo Mountain	REST	Denio Basin	REST

Pasture	Year 7 (2021)	Pasture	Year 8 (2022)
Cowden	4/1-5/31	Black Mountain	4/1-5/31
Alberson Basin	6/1-6/21	Pueblo Mountain	6/1-6/21
Denio Basin	6/22-7/15	Alberson Basin	6/22-7/15
Continental	7/16-8/15 or 10/1-10/31	Continental	7/16-8/15 or 10/1-10/31
Chokecherry	10/1-1/08 or 11/1-1/08	Cowden	10/1-1/08 or 11/1-1/08
Black Mountain	REST	Chokecherry	REST
Pueblo Mountain	REST	Denio Basin	REST

Pasture	Year 9 (2023)	Pasture	Year 10 (2024)
Chokecherry	4/1-5/31	Cowden	4/1-5/31
Alberson Basin	6/1-6/21	Pueblo Mountain	6/1-6/21
Denio Basin	6/22-7/15	Alberson Basin	6/22-7/15
Continental	7/16-8/15 or 10/1-10/31	Continental	7/16-8/15 or 10/1-10/31
Black Mountain	10/1-1/08 or 11/1-1/08	Chokecherry	10/1-1/8 or 11/1-1/08
Cowden	REST	Black Mountain	REST
Pueblo Mountain	REST	Denio Basin	REST

Terms and Conditions that apply to the proposed action:

1. The terms and conditions of the permit may be modified if additional information indicates that revision is necessary to conform per 43 CFR 4130.3-3.
2. The authorized officer reserves the authority to make modifications, following the appropriate level of NEPA compliance, to the annual grazing authorization that are consistent with the standards for rangeland health and allotment specific objectives.
3. A maximum of 4 day active trailing time limitation for moving livestock from pasture to pasture will be implemented.
4. With the exception of salt or mineral blocks, supplemental feeding is not authorized on public lands unless prior approval is requested and given by the authorized officer.
5. Salt and/or mineral blocks shall not be placed within one quarter (1/4) mile of water sources, springs, streams, meadows, riparian habitats, or aspen stands.
6. The permittee is required to install and maintain bird ladders in water toughs. BLM will provide the bird ladders.
7. The permittee is required to perform repair and maintenance on the range improvements as per their signed Cooperative Agreements/Section 4 Permits prior to turning out in a pasture or use area scheduled for livestock use.

8. The permittee's certified actual use report, by pasture/use area, is due 15 days after the end of the authorized grazing period.
9. Pursuant to 43 CFR 10.4(g), the holder of this authorization must notify the authorized officer, by telephone, with written confirmation, immediately upon the discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony (as defined at 43 CFR 10.2). Further, pursuant to 43 CFR 10.4(c) and (d), you must stop activities in the immediate vicinity of the discovery and protect it from your activities for thirty (30) days or until notified to proceed by the authorized officer.
10. Upon approval by the Authorized Officer, dates may be modified up to two weeks on either side of the permit dates provided the authorized annual AUMs are not exceeded.
11. A minimum of 4 inches of stubble height on key riparian herbaceous vegetation species, sedges (*Carex* spp.) and rushes (*Juncus* spp.) in lotic (flowing water) wetland and riparian sites will remain when livestock are removed from the Pueblo Mountain and Denio Basin pastures.
 - 11.1. A minimum of 6-inch stubble height will remain at the end of the grazing season (9/30).
 - 11.2. The permittee will monitor riparian species stubble height requirements during (within) the grazing season to ensure that the stubble height objectives are not exceeded, and take corrective actions if the stubble height is near or exceeding the objective. If the permittee's monitoring indicated that stubble heights are within 2" of the thresholds, they must take proactive measures to remove livestock from the area and notify the BLM of positive actions taken.
 - 11.3. End-of-season monitoring will be conducted to assess the stubble heights of riparian areas. If monitoring indicates that minimum stubble heights are not being met and that livestock are the causal factor, then remedial actions will be required for the subsequent grazing season. The BLM will require any or all of the following: stocking rate adjustments, season-of-use adjustments, increased monitoring by the permittee, increased herding, and/or deferment of grazing on the impacted area.
12. The permittee will monitor within the Pueblo Mountain pasture, making sure not to exceed 10% (linear) alteration of the greenline of Denio Creek by livestock hoof action. BLM compliance monitoring will occur during both grazed and rested years. If BLM monitoring indicates that this condition is not met during any of the years of the permit, stronger actions can be taken by the authorized officer. These actions can include stocking rate adjustments, deferment of grazing on the impacted area, or other actions as deemed necessary to protect the riparian resources.

13. If it is determined that the permittee has done everything required and management objectives are still not being met, BLM may re-assess objectives and management tools, subject to evaluation under NEPA.
14. With prior approval of the authorized officer, livestock numbers for the proposed grazing schedule can vary but AUMs will not be exceeded.
15. Utilization on upland and riparian woody species will not exceed 30%
16. Utilization of key upland grass species during the growing season (May 1 to June 30) will not exceed 30%. Species include bottlebrush squirreltail (*Elymus elymoides* (ELEL5)), Thurber's needlegrass (*Achnatherum thurberianum*), Idaho fescue (*Festuca idahoensis*), basin wildrye (*Leymus cinereus* (LECI4)) and Indian ricegrass (*Achnatherum hymenoides* (ACHY))
17. Utilization on key woody species: serviceberry (*Amelanchier spp*), curlleaf mountain mahogany (*Cercocarpus ledifolius*), antelope bitterbrush (*Purshia tridentata*), snowberry (*Symphoricarpos spp.*), aspen (*Populus tremuloides*) wild rose (*Rosa woodsii* and willow (*Salix sp.*) will not exceed 30% utilization of any of these species.
18. Permittee will be responsible for inventory and control of noxious weeds at water developments.

Long Term Goals and Objectives that apply to the proposed action:

1. Goal - Manage, maintain, and improve public rangeland conditions to provide forage on a sustained yield basis for livestock, with a stocking level of 2,137 AUMs.
2. Goal - Maintain or improve public rangeland conditions to provide forage on a sustained yield basis for big game, including mule deer, pronghorns, and bighorn sheep.
 - 2.1 Objective - maintain annual utilization of no more than 50% on upland key management grass species by livestock.
3. Goal - Maintain or improve sagebrush plant communities on stable soils with structurally diverse shrub component in various age classes (within a stand or among stands across the landscape) with vigorous, diverse, self-sustaining understory of native grasses and forbs based on ecological site potential.
 - 3.1 Objective – Maintain annual utilization of no more than 30% on upland shrub species by livestock.
 - 3.2 Objective – maintain annual utilization of no more than 50% on upland key management grass species by livestock

4. Goal - Improve or maintain PFC ratings at “PFC” on the public reaches of Denio Creek.
 - 4.1 Objective – Within two years of new grazing authorization, increase the Winward greenline stability rating, streambank cover, and streambank stability of Denio Creek within the Pueblo Mountain Pasture.
5. Goal - Manage livestock grazing on public lands to promote healthy sustainable rangeland ecosystems; to maintain or enhance range conditions on public lands.
6. Goal – Improve or maintain the following stream habitat conditions on Denio Creek:
 - 6.1.Objective – Reduce actively eroding banks to less than 30% in each reach (ODF&W Aquatic Inventory)
 - 6.2.Objective – Reduce the seven-day-average maximum temperature of perennial water in Denio Creek to 68 degrees F or less

2.3 Denio Creek Exclosure Alternative

The Moser Ranch, LLC brought the Denio Creek Exclosure alternative forward to the Winnemucca BLM as its desired alternative for meeting the allotment riparian objectives within the Pueblo Mountain pasture. Under this alternative, the current grazing system and terms and conditions would apply. Refer to the no action alternative for analysis of the current grazing system and terms and conditions. The exclosure and minor adjustments in the grazing system needed to accommodate the exclosure are described here and then carried through the analysis.

Under this alternative, the BLM would build an exclosure fence around the reach of Denio creek that flows through the Pueblo Mountain pasture (refer to map 4: Exclosure Fence Location). The fence would be located between the Denio Basin/Pueblo Mountain pasture fence line and the mouth of the canyon and would be as narrow as possible in order to minimize the impact on over-all pasture size, while still adequately protecting the riparian vegetation resources to better meet the standards and guidelines. Narrow “Water-gaps” would be implemented where appropriate.

The permittee would take responsibility for maintenance and repair of the exclosure. Materials and costs would be agreed upon in a cooperative agreement. The grazing system for this alternative is described in table 2.5.

Adjustments in the current grazing system would allow for 1 month of use within each of the mountain pastures (Pueblo Mountain, Alberson Basin and Denio Basin) as well as use in Continental pasture every year. Prior to any Decision regarding implementation of this alternative, a Class III cultural resource inventory and report would be completed for the fence line. All National Register eligible sites would be avoided.

Table 2.5: Alternative 1 rest-rotation grazing system description

Pasture	Year 1-(2015)	Pasture	Year 2-(2016)
Cowden	4/1-5/31	Black Mountain	4/1-5/31
Alberson Basin	6/1-6/30	Pueblo Mountain	6/1-6/30
Denio Basin	7/1-7/31	Alberson Basin	7/1-7/31
Continental	8/1-8/31	Continental	8/1-8/31
Chokecherry	10/1-1/8	Cowden	10/1-1/8
Black Mountain	REST	Chokecherry	REST
Pueblo Mountain	REST	Denio Basin	REST

Pasture	Year 3-(2017)	Pasture	Year 4-(2018)
Chokecherry	4/1-5/31	Cowden	4/1-5/31
Pueblo Mountain	6/1-6/30	Alberson Basin	6/1-6/30
Denio Basin	7/1-7/31	Denio Basin	7/1-7/31
Continental	8/1-8/31	Continental	8/1-8/31
Black Mountain	10/1-1/8	Chokecherry	10/1-1/8
Cowden	REST	Black Mountain	REST
Alberson Basin	REST	Pueblo Mountain	REST

Pasture	Year 5-(2019)	Pasture	Year 6-(2020)
Black Mountain	4/1-5/31	Chokecherry	4/1-5/31
Pueblo Mountain	6/1-6/30	Pueblo Mountain	6/1-6/30
Alberson Basin	7/1-7/31	Denio Basin	7/1-7/31
Continental	8/1-8/31	Continental	8/1-8/31
Cowden	10/1-1/8	Black Mountain	10/1-1/8
Chokecherry	REST	Cowden	REST
Denio Basin	REST	Alberson Basin	REST

Pasture	Year 7-(2021)	Pasture	Year 8-(2022)
Cowden	4/1-5/31	Black Mountain	4/1-5/31
Alberson Basin	6/1-6/30	Pueblo Mountain	6/1-6/30
Denio Basin	7/1-7/31	Alberson Basin	7/1-7/31
Continental	8/1-8/31	Continental	8/1-8/31
Chokecherry	10/1-1/8	Cowden	10/1-1/8
Black Mountain	REST	Chokecherry	REST
Pueblo Mountain	REST	Denio Basin	REST

Pasture	Year 9-(2023)	Pasture	Year 10-(2024)
Chokecherry	4/1-5/31	Cowden	4/1-5/31
Pueblo Mountain	6/1-6/30	Alberson Basin	6/1-6/30
Denio Basin	7/1-7/31	Denio Basin	7/1-7/31
Continental	8/1-8/31	Continental	8/1-8/31

Black Mountain	10/1-1/8	Chokecherry	10/1-1/8
Cowden	REST	Black Mountain	REST
Alberson Basin	REST	Pueblo Mountain	REST

Under this alternative, the livestock numbers, seasons of use, and AUMs for the Pueblo Mountain Allotment would be as shown in table 2.2.

2.4 Reduced Grazing Alternative (Maximum Reduction)

Under the Maximum Reduction Grazing Alternative the permittee would not be authorized to graze livestock on the Pueblo Mountain Allotment for a period of ten years. Livestock grazing would be phased out over a period of five years.

2.5 Alternatives Considered but not Analyzed in Detail

A pasture-rotation system with holistic grazing strategy was considered. Through this strategy, resource issues on Denio Creek would be addressed using the pasture-rotation system described in the proposed action. In addition, strategies such as riparian riders and/or riparian dogs would be used to aid in livestock movement along Denio Creek. The financial demands of this alternative would be expected to lead to the inability of the permit applicant to adhere to the permit and therefore put the applicant out of business.

There were several variations of the Denio Creek enclosure fence. These included:

- Changing the pasture fence boundaries, splitting the Pueblo Mountain pasture in a north/south direction with Denio Creek on one side
 1. Livestock would graze the portion of the pasture that did not include Denio Creek more often (two or three years) and graze the creek side of the fence less (once every 2-3 years)
- Changing the pasture fence boundaries of the Pueblo Mountain and Denio Basin pastures so that there was an east and a west pasture instead of an upper and lower pasture. The dividing fence would run along one side of the creek.

There were several variations of the proposed grazing schedule that came about while trying to meet the needs of all interested parties.

Ultimately these alternatives were deemed to not properly address the issues on the ground and were dropped from discussion.

3.0 THE AFFECTED ENVIRONMENT

To comply with the NEPA, the BLM is required to consider specific elements of the human environment that are subject to requirements specified in statute or regulation or by executive order. The following tables (tables 3.1 and 3.2) outline the elements that must be considered in all environmental analyses, as well as additional resources deemed necessary for evaluation by the BLM, and denotes if the proposed action or alternatives affects those elements.

Table 3.1 List of Supplemental Authorities

Supplemental Authorities	Not Present	Present Not Affected	Present Affected	Rationale/Comments
Air Quality		X		None of the activities described in the proposed action or its alternatives would be expected to have a measurable impact on the quality of air
Areas of Critical Environmental Concern (ACECs)	X			There are no ACECs within this allotment
Cultural Resources			X	section 3.2
Environmental Justice	X			
Floodplains		X		Each stream within the Pueblo Mountain Allotment would have an associated 100 year floodplain. Review of records indicates that no flood plains have been delineated. The proposed action and its alternatives would not authorize any new development as discussed in EO 11988. Therefore, development within or outside of floodplains would not occur and would not cause threats to human health and property due to flooding or degradation of floodplain function.
Historic Trails (Including visual setting)	X			There are no National Historic Trails in or near the allotment
Invasive, Nonnative Species			X	Section 3.3
Migratory Birds			X	Section 3.4
Native American Religious Concerns		X		Section. 3.5
Prime or Unique Farmlands	X			No areas within this allotment have been designated as Prime Or Unique Farmlands.
Threatened & Endangered Species			X	Section 3.6
Wastes, Hazardous or Solid	X			No areas have been identified within the project as areas of concern nor

Supplemental Authorities	Not Present	Present Not Affected	Present Affected	Rationale/Comments
				are the actions expected to have any impact on this resource
Water Quality (Surface and Ground)		Groundwater Quality: X	Surface water X	Section 3.7 None of the activities described in the proposed action or its alternatives would be expected to have a measurable impact on the quality of groundwater resources.
Wetlands and Riparian Zones			X	Section 3.8
Wild and Scenic Rivers	X			There are no Wild and Scenic River designations within this Allotment
Wilderness	X			There are no designated Wilderness areas within this allotment

Table 3.2 Additional Affected Resources

Additional Affected Resources	Not Present	Present Not Affected	Present Affected	Rationale/Comments
Fisheries			X	Section 3.9
Lands with Wilderness Characteristics	X			Section 3.10
Paleontology		X		Section 3.11
Social Values and Economics			X	Section 3.12
Soils			X	Section. 3.13
Special Status Species			X	Section 3.14
Vegetation			X	Section 3.15
Wilderness Study Areas			X	Section 3.16
Wildlife			X	Section 3.17

3.1 Background

The Pueblo Mountain Allotment is located approximately 100 miles north of Winnemucca, Nevada, starting between Denio Summit and the SR 140/292 junction and going north to encompass part of the Pueblo Mountain WSA in Oregon. The western border runs near to the Sheldon National Wildlife Refuge while the eastern boundary runs up the Pueblo Valley. The allotment is approximately 36,545 acres, of which 33,648 is public land, and 2,897 acres are private (Refer to map 2: Pueblo Mountain Allotment). The elevation ranges from approximately 4,300 feet at the valley floor to 6,000 feet at the top of Pueblo Mountain.

Between 2001 and present there has been annual maintenance of the fuel breaks that border highway 140, which goes through the project area. Various means have been employed to maintain these breaks. These methods include herbicide treatments, mowing, and mechanical disking. A total of 951.41 acres have been treated, none of which are on BLM lands but are within the NDOT Right-of-Way. The repeated occurrence of wildfire has altered the vegetation of much of the assessment area. Between 1985 and 1999, 4 separate Nevada wildfires have burned approximately 4,549 acres of the assessment area (BLM 2006f). Most of the affected areas have been subjected to a variety of stabilization and rehabilitation treatments with mixed results.

There are multiple range improvements within the allotment (Refer to map 5: Existing Range Improvements). These include permanent fences as well as water range improvements. There are seven pastures that are all separated with fencing. In addition, there are two developed water pipelines (Mahogany and Chokecherry) and six developed springs.

Three developed springs are within the Alberson Basin pasture. These are the Bench, Stateline, and Erquiaga Springs. The Cowden pasture contains the Cowden Mine Spring. The Chokecherry pasture contains the Alberson Basin and Chokecherry Springs. Chokecherry Spring has a pipeline with four troughs. Two of these troughs are in the Chokecherry pasture, one is in the Continental pasture and one trough is in the Black Mountain pasture. The Chokecherry pasture also contains the Spring Canyon pipeline.

The Black Mountain pasture also has the Mahogany pipeline. This pipeline runs from the Mahogany Spring, which is South of the pasture and within the neighboring Wilder-Quinn Allotment.

Average monthly climate change was derived from the Western Regional Climate Center. This data represents averages for Texas Spring and best depicts the climate conditions on the allotment (table 3.3). Average snowfall is most likely higher, while average minimum and maximum temperatures are likely lower within the allotment due to higher elevations. Percent of possible observations for period of record: Max. Temp.: 90% Min. Temp.: 90% Precipitation: 91.3% Snowfall: 87.2% Snow Depth: 80.1%.

Table 3.3: Period of Record: 10/20/1951 to 1/31/2012

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average	Max.	41.7	47.0	54	62	71.7	81.0	91.7	89.7	80.2	67.0	51.4	42.1	65
Temperature (F)														
Average	Min.	21.2	24.2	27.5	31.1	38.1	45.3	52.2	50.4	41.3	32.9	25.5	21.0	34.2
Temperature (F)														
Average	Total	0.84	0.75	0.96	0.93	1.15	0.86	0.23	0.35	0.45	0.65	0.96	0.83	8.97
Precipitation (in.)														
Average	Total	5.1	2.8	2.1	1.0	0.2	0.1	0.0	0.0	0.0	0.3	2.8	4.9	19.3
Snowfall (in.)														
Average	Snow	1	0	0	0	0	0	0	0	0	0	0	0	1
Depth (in.)														

Supplemental Authorities

3.2 Cultural Resources

A number of small cultural resource inventories have been completed within the Pueblo Mountain Allotment. As a consequence, 29 cultural resource sites have been identified within the allotment boundary. These are primarily small prehistoric lithic scatters and isolated projectile points and tools. There are also a few historic sites and isolates associated with historic mining and ranching. These include dugouts, structures, adits, and other associated artifacts and features. The Cowden Mine dates to the 1890's and has been worked sporadically since then. Although the mine itself has not been recorded, several adits associated with it have been recorded. There are several other unrecorded historic mines within the allotment. The town of Denio dates to approximately 1890.

Only one heavy use area located on Denio Creek has been identified through past range monitoring efforts. No cultural resource sites have been recorded in this area, but because of its proximity to a permanent stream, this area was considered to be potentially culturally sensitive. On June 18, 2013 BLM Archeologist conducted a field inspection of the heavy use area to check for evidence of cultural resources and any damage. Although the area was heavily vegetated, restricting visibility, cattle trails, stream bank walls and other areas where the ground was visible were checked. No evidence of cultural resources was found. It is important to note that there was a major flood event in 2009 which would have washed surface artifacts downstream as well as possibly burying any remaining features or artifacts under several inches of silt.

3.3 Invasive, Nonnative Species

Invasive species inventory and/or inventory records for the Pueblo Mountain Allotment are currently incomplete. Noxious weeds documented within the general vicinity, but not officially inventoried within the Pueblo Mountain Allotment at this time include salt cedar (*Tamarix spp.*), Scotch thistle (*Onopordum acanthium*), hoary cress (*Cardaria draba*), and Canada thistle (*Cirsium arvense*). Salt cedar occupies riparian and semi-riparian areas and is irregularly distributed in the area. Canada thistle is found in seeps and riparian areas. Scotch thistle is widely

dispersed across NW Nevada and is found in both riparian and upland habitats. Hoary cress is also widely dispersed across NW Nevada and is typically found in disturbed areas occurring along roadsides, in historic mining disturbance, and where livestock typically congregate, which would include riparian areas, water developments, and fencelines/gates. These species are subject to Winnemucca District noxious weed control efforts when populations are located.

3.4 Migratory Birds

Neo-tropical migrant bird species are those species that breed in the temperate portions of North America and winter in the tropics in either North or South America. They are protected by the Migratory Bird Treaty Act of 1918 as amended (16 U.S.C. 703 *et seq*) and additional emphasis on maintaining or improving their habitats is provided by Executive Order #13186. Within the Great Basin and the project area, quality riparian habitats and healthy sagebrush communities with inclusions of trees and shrubs are required for healthy neo-tropical migrants' populations.

Vegetation and landcover maps from the Southwest Regional Gap Analysis Project (SWReGAP), Oregon GAP analysis project, and the National Resources Conservation Council (NRCS) were examined for vegetation composition and habitat characteristics to determine the types of migratory birds that would likely be found in the area. The SWReGAP and Oregon GAP maps indicate that the Pueblo Mountain Allotment contains mostly agricultural lands, sagebrush shrublands and steppes, greasewood flats, salt desert scrub, grasslands, and invasive annual grasslands. There are also several smaller areas of less common vegetation types such as riparian woodlands, pinyon-juniper woodlands, mountain mahogany woodlands, and emergent marsh that are important for migratory birds. Several databases were consulted for historical sightings of migratory birds in and around the Pueblo Mountain Allotment including: (1) the Nevada Department of Wildlife (NDOW) Diversity database (2011), (2) the Nevada Natural Heritage Program (NNHP) database (2011), and (3) the Great Basin Bird Observatory (GBBO) Final Atlas Data Distribution database (2011).

All birds in the Winnemucca District (WD) are considered migratory birds with the exception of gallinaceous birds such as the California quail (*Lophortyx californicus*), chukar (*Alectoris graeca*), and sage-grouse (*Centrocercus urophasianus*). Migratory birds may be found in any area of the district as either seasonal residents or as migrants. Migratory bird species that may occur in the habitat types of the Pueblo Mountain Allotment are shown below relative to habitat types.

Montane riparian areas may include the following migratory bird species: MacGillivray's warbler (*Oporornis tolmiei*), Wilson's warbler (*Wilsonia pusilla*), warbling vireo (*Vireo gilvus*), Lewis' woodpecker (*Melanerpes lewis*), red-naped sapsucker (*Sphyrapicus nuchalis*), Virginia's warbler (*Vermivora virginiae*), calliope hummingbird (*Stellula calliope*), broad-tailed hummingbird (*Selasphorus platycercus*), orange-crowned warbler (*Vermivora celata*), fox sparrow (*Passerella iliaca*), song sparrow (*Melospiza melodia*), dark-eyed junco (*Junco hyemalis*), Lincoln's sparrow (*Melospiza lincolnii*), wouldow flycatcher (*Empidonax traillii*), dusky flycatcher (*Empidonax oberholseri*), brown-headed cowbird (*Molothrus ater*), American robin (*Turdus migratorius*), house finch (*Carpodacus mexicanus*), and Cassin's finch (*Carpodacus cassinii*) (GBBO 2003).

Lowland riparian areas may include: American robin, bank swallow (*Riparia riparia*), barn swallow (*Hirundo rustica*), Bewick's wren (*Thryomanes bewickii*), black-chinned hummingbird (*Archilochus alexandri*), black-headed grosbeak (*Pheucticus melanocephalus*), broad-tailed hummingbird (*Selasphorus platycercus*), brown-headed cowbird, downy woodpecker (*Picoides pubescens*), house finch, house wren (*Troglodytes aedon*), lazuli bunting (*Passerina amoena*), lesser goldfinch (*Carduelis psaltria*), northern flicker (*Colaptes auratus*), northern mockingbird (*Mimus polyglottos*), Bullock's oriole (*Icterus bullockii*), northern rough-winged swallow (*Stelgidopteryx serripennis*), song sparrow (*Melospiza melodia*), spotted sandpiper (*Actitis macularia*), tree swallow (*Tachycineta bicolor*), violet-green swallow (*Tachycineta thalassina*), warbling vireo (*Vireo gilvus*), western kingbird (*Tyrannus verticalis*), western wood-pewee (*Contopus sordidulus*), wouldow flycatcher, yellow-breasted chat (*Icteria virens*), yellow warbler (*Dendroica petechia*), and snowy plover (*Charadrius alexandrinus nivosus*) (GBBO 2003).

Sagebrush and salt desert shrub areas may include: black-throated sparrow (*Amphispiza bilineata*), Brewer's blackbird (*Euphagus cyanocephalus*), Brewer's sparrow (*Spizella breweri*), canyon wren (*Catherpes mexicanus*), gray flycatcher (*Empidonax wrightii*), green-tailed towhee (*Pipilo chlorurus*), loggerhead shrike (*Lanius ludovicianus*), rock wren (*Salpinctes obsoletus*), sage sparrow (*Amphispiza belli*), sage thrasher (*Oreoscoptes montanus*), western meadowlark (*Sturnella neglecta*), and vesper sparrow (*Pooecetes gramineus*) (GBBO 2003).

Several species of raptors, also covered under the MBTA and Executive Order 13186, may utilize the allotment including bald eagle (*Haliaeetus leucocephalus*), golden eagle (*Aquila chrysaetos*), burrowing owl (*Athene cunicularia*), ferruginous hawk (*Buteo regalis*), northern goshawk (*Accipiter gentilis*), prairie falcon (*Falco mexicanus*), northern harrier (*Circus cyaneus*), red-tailed hawk (*Buteo jamaicensis*), and sharp-shinned hawk (*Accipiter striatus*).

The bald eagle, golden eagle, Lewis' woodpecker, burrowing owl, northern goshawk, Brewer's sparrow, loggerhead shrike, and sage thrasher are BLM designated sensitive species and are discussed in Section 3.14, "Special Status Species".

3.5 Native American Religious Concerns

Numerous laws and regulations require consideration of Native American concerns. These include the National Historic Preservation Act of 1966 as Amended (NHPA), the American Indian Religious Freedom Act of 1978 (AIRFA) as amended, Executive Order 13007 (Indian Sacred Sites), Executive Order 13175 (Consultation and Coordination with Tribal Governments), the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA), the Archaeological Resources Protection Act of 1979 (ARPA) as well as NEPA and FLPMA.

The proposed action is within the traditional territory of the Atsakudöka tuviwarai ("red butte dwellers") and Madökadö ("wild onion eaters") bands of the Northern Paiute peoples (Stewart 1941). These bands are identified with the Fort McDermitt Paiute and Shoshone Tribe, and the Summit Lake Paiute Tribe.

While there are no known traditional cultural properties or sacred sites in the allotment, the Northern Paiutes consider all water to be sacred (Hultkrantz 1986, Miller 1983). There are numerous springs in the allotment which may have medicinal powers or be the home of “water babies,” supernatural creatures that inhabit springs. Native Americans also utilize a variety of plants for traditional foods, plus medicinal and other uses.

The following tribes were notified by letter on the grazing permit renewals for 2011 and 2012: Battle Mountain Tribal Council, Cedarville Rancheria, Fallon Paiute and Shoshone Tribe, Fort Bidwell Indian Council, Fort McDermitt Paiute and Shoshone, Lovelock Paiute Tribe, Pyramid Lake Paiute Tribe, Reno-Sparks Indian Colony, Summit Lake Paiute Tribe, Susanville Rancheria, and Winnemucca Indian Colony. On August 9, 2012 the Winnemucca District received a letter from the Summit Lake Paiute Tribe stating they did not have resources to comment on renewal of this grazing permit and did not have a desire to participate in consultation regarding this allotment.

Based on the information described above, Native American Religious Concerns are not expected to be affected and therefore will not be further analyzed.

3.6 Threatened and Endangered Species

A species list of threatened, endangered, and candidate species was requested from the Service for the proposed project area, per their online version (10-18-2013; <http://ecos.fws.gov/ipac/>). Candidate species are plants and animals for which the service has sufficient information on their biological status and threats to propose them as endangered or threatened under the Endangered Species Act (ESA), but for which development of a proposed listing regulation is precluded by other higher priority listing activities. The Nevada and Oregon Fish and Wildlife Services responded on October 18, 2013 with an electronic version of an official species list. The Oregon Fish and Wildlife Service responded and referred to their on-line process for agencies to obtain a species list by county and an on-line species list was obtained for Harney County, Oregon. Table 3-4 shows a list of proposed and candidate species which may occur within the Pueblo Mountain Allotment:

Table 3-4: The USFWS list of Threatened, Endangered, and Candidate species that may be found on the Oregon or Nevada side of the Pueblo Mountain Allotment

Common Name	Scientific Name	Status	State
Lahontan cutthroat trout	<i>Oncorhynchus clarkii henshawi</i>	Threatened	NV, OR
Greater sage-grouse	<i>Centrocercus urophasianus</i>	Candidate	NV, OR
Whitebark pine	<i>Pinus albicaulis</i>	Candidate	NV
Borax Lake chub	<i>Gila boraxobius</i>	Endangered	OR
Bull trout	<i>Salvelinus confluentus</i>	Threatened	OR
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	Threatened	OR, NV
Columbia spotted frog	<i>Rana luteiventris</i>	Candidate	OR
Malheur wire-lettuce	<i>Stephanomeria malheurensis</i>	Endangered	OR

Although whitebark pine was suggested by USFWS as potentially present in Nevada, this species has not been documented within the project area (NNHP and USFWS website). Therefore, whitebark pine has been dismissed from further analysis as they do not likely occur in the project area. These same websites indicate that Borax Lake chub, bull trout, and Malheur wire-lettuce have been documented in Harney County, Oregon but are not likely to occur in the Pueblo Mountain Allotment and are dismissed from further analysis. The four species that will be discussed and analyzed are Lahontan cutthroat trout, greater sage-grouse, yellow-billed cuckoo, and Columbia spotted frog. The greater sage-grouse, and Columbia spotted frog are discussed in detail in Section 3.14 Special Status Species.

Lahontan Cutthroat Trout

The Lahontan cutthroat trout (LCT) is a threatened species under the Endangered Species Act of 1973, as amended, and is the only listed species known to occur on the Pueblo Mountain Allotment. Occupied LCT habitat exists in Denio Creek (Refer to map 6: Denio Creek). LCT habitat requirements include: spawning and nursery habitat characterized by cool water, pools in close proximity to cover and velocity breaks, well vegetated and stable stream banks, and relatively silt free rocky substrate in riffle-run areas (USFWS 1995).

Denio Creek was assessed with a stream habitat survey by Oregon Department of Fish and Wildlife (ODF&W) in 2004 and 2012. The stream habitat surveys are used for long-term trend data. The 2012 habitat survey of Denio Creek was divided into eight reaches (map 7: 2012 Denio Creek Stream Survey Reaches) and use was light grazing, and the actively eroding stream banks was 18%. Reach 2 was 70% dry of the 1994 meters of stream length, the land uses were wilderness study area and light grazing, and the actively eroding banks was 23%. Reach 3 is only 500 meters, the land uses were wilderness study area and light grazing, and the active bank erosion was 6%. Reach 4 is only 399 meters, and the land use was wilderness study area, and active bank erosion was 4%. Reach 5 was 1194 meters in stream length, the land uses were wilderness study area and heavy grazing, and the active bank erosion was high at 94%. Reach 6 was 466 meters, the land uses were wilderness study area and heavy grazing, and the bank erosion was 88%. Reach 7 was 764 meters, the land use was heavy grazing, and 96% of the stream banks were actively eroding. ODF&W (2012) defined active erosion as: “actively, recent eroding, or collapsing banks that may have the following characteristics: exposed soils and inorganic material, evidence of tension cracks, active sloughing, or superficial vegetation that does not contribute to bank stability.” ODF&W (2012) observed trout in reaches 2, 3 and 4. The following tables show the comparison between a couple parameters from the 2004 and 2012 habitat surveys.

Table 3-5: Comparison of Actively Eroding Banks from the 2004 and 2012 ODF&W Habitat Surveys of Denio Creek

Actively Eroding Banks	Reach 1	Reach 2	Reach 3	Reach 4	Reach 5	Reach 6	Reach 7
2012 Habitat Survey	18%	23%	6%	4%	94%	88%	96%
2004 Habitat Survey	78%	80%	34%	49%	35%	37%	40%

Table 3-6: Comparison of undercut banks from the 2004 and 2012 ODF&W Habitat Surveys of Denio Creek

Undercut Banks	Reach 1	Reach 2	Reach 3	Reach 4	Reach 5	Reach 6	Reach 7
2012 Habitat Survey	4%	7%	7%	3%	3%	0%	0%
2004 Habitat Survey	2%	13%	5%	8%	8%	9%	9%

The comparison between the surveys that were beneficial was the decrease of actively eroding stream banks in Reaches 1-4. The comparison also resulted in negative results that included the increase in actively eroding stream banks in Reaches 5-7, and a decrease in undercut stream banks in Reaches 4-7. Although bank erosion is a natural process, actively eroding stream banks can be measurable sources of silt and sand. Actively eroding stream banks tend to inhibit the development of undercut banks and degrade riparian vegetation.

Denio Creek flows through three pastures within the allotment (Cowden, Pueblo Mountain, and Denio Basin). The ODF&W habitat survey indicated that reach 1 and most of reach 2 were in the Cowden Pasture. Part of reach 2 and all of reaches 3-6 were in the Pueblo Mountain Pasture (table 3-7). Reaches 7 and 8 were in the Denio Basin Pasture, which included some private land.

Table 3-7: BLM Monitoring Data on Denio Creek in Pueblo Mountain Pasture

Pueblo Mtn Pasture Year Grazed	Dates Grazed	Number of Cattle	Stubble Height (measured before the end of growing season)	Streambank Alteration
2006	June 1-22	258	4.8"	16%
2007	June 1-22	258	6.1"	10%
2008	Rested	0	> 12"	0%
2009	June 1-22	258	5.2"	25% **
2010	June 15-July 9	258	7.3"	21% **
2011	Rested	10*	14.2"	7%
2012	June 1-22	258	3.9"	16%
2013	June 11-25	258	4.8"	16%

* Unauthorized livestock – moved after discovered in the wrong pasture (gate left open).

** A high flow event happened in early 2009, depositing excessive sediment on the stream banks, the streambank alteration was measured from 21% to 25%. However, with those two years following a high water event, the streambank alteration is not to be considered as the riparian vegetation had been covered by sediment (Burton et al. 2011).

LCT require well vegetated and stable stream banks, and these are maintained by setting objectives that would limit grazing use on vegetation and stream banks. The monitoring of riparian vegetation and streambank alteration on Denio Creek for the past eight years (2006-2013) has been based on a three week grazing of the Pueblo Mountain Pasture (table 3-8). The stubble height objective for the riparian vegetation was set at 5" at the end of the growing season. The eight years of collecting this data came at the time the cattle were removed from the pasture, and the stubble height ranged from 4" to 7" on the grazed years and greater than 12" on rested years. The linear streambank alteration objective was set at less than 10%. For the past eight years, on grazed years, the streambank alteration ranged from 10% to 16%, while on rested years

it ranged from 0% to 7%. The streambank alteration objective was met on one of the four grazed years that could be considered.

Western yellow-billed cuckoo

This bird is a riparian obligate species that requires dense cottonwood-willow communities where they typically nest in willows and use cottonwoods for foraging. Prey consists primarily of large insects including caterpillars, moths, crickets, beetles, flies, but will also feed on spiders, frogs, and small lizards. These birds frequently forage by gleaning insects from leaves and stems, usually while perched or hovering. Yellow-billed cuckoos prefer deciduous riparian forest and may require intact woodlands of at least 40 ha to breed, and prefers woodlands greater than 80 ha (Laymon and Halterman 1989). While this species has been recently listed by the USFWS (October 2014), the Service has confirmed that it does not occur within the area affected by this analysis

3.7 Water Quality (Surface)

Few recent water quality data are available for sources in the Pueblo Mountain Allotment. Several springs within the allotment were inventoried circa 1983. These inventories were conducted during August and September of that year. Where water quality data were collected, electrical conductivity averaged ~250 (max 380) $\mu\text{S}/\text{cm}$ and temperature averaged ~20 (max 23) $^{\circ}\text{C}$. These data do not represent recent conditions, but indicate that surface water sources within the allotment, generally found mid slope or at higher elevations, are capable of maintaining a high degree of water quality during the warm months. This may have been augmented by particularly high discharges at these sites due to higher than normal precipitation in 1982 and 1983.

In the past few years, stream temperature has been collected in Denio Creek at two locations (map 8: Denio Creek Thermographs). The lower Denio Creek in-stream temperature logger (thermograph) was launched on 07/03/2012 and data have been collected once an hour since launching. The middle Denio Creek thermograph was installed on 08/09/2013 and data have been collected once an hour since launching. Both thermographs are located in the lower portion of Denio Creek. After installation, it was found that the lower of the two sites went dry for a period of time in 2012. Data indicate that the Lower Denio Creek thermograph site was dry from approximately 07/21 to 10/23 (~three months) in 2012 and 07/06 to 10/03 (~three months) in 2013. In 2013, the second thermograph was installed in a location which was less likely to completely dry up. The Oregon Department of Environmental Quality has set a temperature standard for streams that contain LCT. The standard indicates that the Seven-Day-Average Maximum Daily Temperature should not exceed 68 $^{\circ}\text{F}$. The highest observed Seven-Day-Average Maximum Daily Temperature at the middle Denio Creek thermograph was approximately 63 $^{\circ}\text{F}$ on 08/20/2013.

Although specific data are not available, surface water quality in the Pueblo Mountain Allotment would be expected to have varied over time due to seasonal/ yearly variability and the rotated presence of livestock. Drier and hotter seasons and years would lead to higher surface water temperatures and decreased discharges in streams and at springs. This would generally have led to increased concentrations of dissolved solids, decreased dissolved oxygen, and increased

growth of algae. Cooler and wetter seasons and years would have caused the opposite. When cattle would have been present at any given location, there would have been a slight, but potentially measurable, increase in nutrients and bacteria from urine and feces. This increase would generally have been short lived (less than one season) with the exception of “cow pies” which may not break down or be flushed away immediately. Use of wetlands and riparian zones by livestock would also likely have led to increased sediment load and turbidity due to physical alteration of the soils at these locations. Where appropriate vegetative communities were present, these changes would have been minimal and short lived. See Section 3.8, Wetlands and Riparian Zones, for a more complete description of the existing condition of wetland and riparian zone vegetation. Utilization of wetland and riparian vegetation may have also lead to decreased shading of surface water sources which can lead to increased water temperatures. Data are not available to determine whether or not this has been the case in the Pueblo Mountain allotment or to what degree.

3.8 Wetlands and Riparian Zones

Pueblo Mountain Allotment contains one perennial stream, Denio Creek. The creek flows in a southeast direction from a series of springs in the north portion of the allotment. Riparian habitat on the creek is varied, depending on the gradient. The steeper sections are dominated by willows with wild rose and cottonwood mixed in. The lower gradient sections contain a mixture of riparian vegetation, including sedges and rushes. On the portions where the channel has incised, upland vegetation has encroached on the floodplain. The allotment also contains several springs. Most are cold water springs at mid to upper elevations. The Continental Pasture also contains hot spring sources.

Lotic PFC assessments have been completed multiple times on Denio Creek. The creek was divided into 3 reaches for the purpose of determining riparian functionality (map 9: Denio Creek PFC). PFC is not a monitoring tool, but rather a general assessment made based on the professional judgment of an interdisciplinary team. PFC is used to identify areas or factors of concern within riparian areas.

PFC is a method for assessing the physical functioning of riparian and wetland areas. The term PFC is used to describe both the assessment process, and a defined, on-the-ground condition of a riparian-wetland habitat. In either case, PFC defines a minimum or starting point. The PFC assessment provides a consistent approach for assessing the physical functioning of riparian-wetland areas through consideration of hydrology, vegetation, and soil/landform attributes. The PFC assessment synthesizes information that is foundational to determining the overall health of a riparian-wetland area (Riparian Area Management, TR 1737-15 1998 (The National Riparian Service Team)).

Reach 1 (lower reach) extends the length of the canyon at the southeast end of the stream, approximately 1.9 miles in length. On 07/22/1997, this reach was determined to be in properly functioning condition (PFC). This reach was again rated as PFC on 07/03/2012.

Reach 2 (middle reach) extends from the head of the canyon upstream to the southern boundary of private land on the creek, approximately 1.1 miles in length. On 07/22/1997, this reach of the

stream was determined to be functioning at risk (FAR) with no apparent trend. Riparian vegetation was lacking in vigor, diversity, and age structure primarily due to the lack of riparian woody species. This reach was assessed again on 08/07/2007 and rated at PFC, though a lack of woody species was again noted. A tree planting project was completed on the same day as the assessment. This included the planting and protective fencing of multiple cottonwood saplings. This reach was assessed again on 06/13/2012 and rated FAR with no apparent trend. Erosional issues (lateral and vertical) were the primary reason. Some of the trees planted in 2007 have survived and appear to be doing well. Others are no longer present and the cause is unknown, some of the supporting t-posts are present, but bent which may suggest that they were rubbed on by cattle.

Reach 3 (upper reach) extends from the northern boundary of private land along the creek upstream to the headwaters of the creek, approximately 1 mile in length. On 07/22/1997, this reach of the stream was determined to be PFC. This reach was assessed again on 06/13/2012 and rated FAR with no apparent trend. Erosional issues were the primary factor for the “at risk” determination. Photo monitoring in the upper reach indicates that amount of woody and herbaceous riparian vegetation has increased since 1997. Despite this, the upper reach contains some active head cuts.

Additional information has been collected on Denio Creek riparian habitat in support of LCT habitat monitoring data (table 3.8). The results of this monitoring are summarized in the Pueblo Mountain Allotment Monitoring Report. In Reach 2 of Denio Creek, stubble heights of key herbaceous riparian species is generally 12” or greater in years of rest. In years of non-rest the residual stubble height of these species ranges from approximately 4” to 6”. Linear stream bank alteration during rested years ranged from 0% to 7%. During non-rested years, linear stream bank alteration ranged from 10% to 26%.

Table 3.8: PFC Assessments on Denio Creek

Reach Number	Dated Monitored	Result
1	7/22/1997	PFC
1	7/03/2012	PFC
2	7/22/1997	FAR no apparent trend
2	8/7/2007	PFC
2	6/13/2012	FAR no apparent trend
3	7/22/1997	PFC
3	6/13/2012	FAR no apparent trend

No lentic PFC assessments have been conducted within the allotment. Several springs within the allotment have been developed. Although the functional condition of the associated wetlands or riparian areas at these sites has not been documented, the effects of these types of improvements can be generally described. Springs that are developed for livestock watering generally include a spring box/ head box which delivers water to a trough. These developments generally lead to some degree of loss of riparian habitat at the spring source due to decreased water availability. Water that flows out of troughs into overflow ponds can start to support additional riparian vegetation. Riparian vegetation both at the spring source and at overflow ponds is heavily

utilized by livestock especially during the hotter months. Moist soils associated with the source and overflow areas can also become altered (i.e., punching and hummocking) by cattle.

Analysis shows some detriment to the attainment of Standard 2 of the Southeast Oregon Resource Advisory Council Area Standards and Guidelines.

Additional Affected Resources

3.9 Fisheries

Pueblo Mountain Allotment contains one perennial stream, Denio Creek (map 6: Denio Creek). The creek is entirely within the Oregon portion of the allotment. Denio Creek originates on the southern slope of the Pueblo Mountains at an approximate elevation of 7,100 feet, flowing in a southeast direction from a series of springs in the north portion of the allotment. The creek is approximately 4 miles in length and terminates into the Pueblo Slough near the town of Denio at an elevation of 4,265 feet. Riparian habitat on the creek is varied, depending on the gradient. The steeper sections are dominated by willows with wild rose and cottonwood mixed in. The lower gradient sections contain a mixture of riparian vegetation, including sedges and rushes. On the portions where the channel has incised, upland vegetation has encroached on the floodplain.

At least two miles of this creek have been confirmed as occupied habitat for the Lahontan cutthroat trout (*Oncorhynchus clarkii henshawi*) (LCT). The LCT is discussed and analyzed in the Threatened and Endangered Species section of this document.

3.10 Lands with Wilderness Characteristics

Section 201 of the Federal Land Policy Management Action (FLPMA) requires the BLM to maintain on a continuing basis an inventory of all public lands and their resources and other values, including wilderness characteristics. The BLM must analyze the potential effects of proposed actions and alternatives for land use plan decisions on lands with wilderness characteristics when they are present (BLM 2011b). In order for an area to qualify as having wilderness characteristics, it must be of sufficient size (roadless areas with over 5,000 acres of contiguous BLM lands), possess naturalness qualities and provide for outstanding opportunities for either solitude or primitive and unconfined recreation (BLM 2012).

The assessment area to determine the direct and indirect effects on lands with wilderness characteristics are the wilderness inventory units that are located within the Pueblo Mountain Allotment. Initial wilderness inventories within the Winnemucca District were reviewed. Portions of wilderness inventory units NV-020-609 (28%), NV-020-619 (33%), NV-020-640 (36%), and NV-020-642 (42%) are located within the allotment. Further inventory for units 619 and 640 were not recommended, while more intensive inventories were recommended for Units 609 and 642 (BLM 1979). Subsequent intensive inventory for Unit 609 determined the unit should be dropped from further consideration because the area did not possess outstanding opportunities for solitude or primitive and unconfined recreation (BLM 1980a). Unit 642 was inventoried as part of a larger unit (2-81 – Oregon) during the intensive inventory process. This larger unit was subdivided based on presence of roads. All subunits except one were determined

to be of insufficient size to be classified as having wilderness characteristics. The one subunit was the base area for what is currently Pueblo Mountain WSA (BLM 1980b). A review of current GIS data shows numerous roads and fences are present throughout all of these units, except for the portion of Unit 642 that is now the Pueblo WSA.

Wilderness inventory unit NV-020-642A in the Burns Field Office was reviewed for wilderness characteristics in November of 2002. It was determined this area did not meet the size or naturalness requirements and therefore lacks wilderness characteristics. As all of the inventory units within the allotment are lacking the necessary elements to be qualified as lands with wilderness characteristics, this resource is not present and is therefore dismissed from further analysis.

3.11 Paleontology

No data is available for the paleontological potential of the Burns District portion of the allotment. There are no known vertebrate paleontological resources within the WDO portion of the Pueblo Mountain Allotment. Per BLM IM 2008-2009, the Potential Fossil Yield Classification (PFYC) has been evaluated. The majority of the Winnemucca District portion of the allotment is classified as 3(a) moderate potential. The remainder is a mix of Class 1—very low potential, Class 2—low potential, Class 3—moderate/unknown potential, and a small amount of Class 4a—high potential. Since the majority of the project area has very low to moderate potential and the Class 4a area is in an area where livestock use is light, paleontology is not considered a present affected resource.

3.12 Social and Economic Values

The Pueblo Mountain Allotment covers approximately 36,545 acres (including 33,648 acres of BLM-administered public land) located on the Oregon/Nevada state line, with the nearest town being Denio, Nevada. Denio is an unincorporated community located in Humboldt County, Nevada and just south of the Oregon state border and Harney County, Oregon.

Population

The 2010 U.S. Census reported the population of the Denio CDP to be 47 (Census, 2010a). Denio and surrounding areas are rural and sparsely populated. The Nevada Commission on Tourism describes this area as “a popular spot for outdoor recreation like hunting and fishing, while the area’s local mines make opal mining and rock hounding another enjoyable pursuit” (Nevada Commission on Tourism, 2012).

Humboldt County, Nevada had a population of 16,528 in 2010 with about 45 percent of residents living in the City of Winnemucca – about an hour and a half drive south-southeast from Denio. The remaining population was generally dispersed throughout the 9,626 square mile county. Humboldt County cites mining (especially gold), agriculture, and tourism as the key economic sectors (Humboldt, 2012).

Harney County, Oregon spans just over 10,000 square miles and had a population of 7,422 in 2010. Approximately 60 percent of residents lived in the City of Burns or the City of Hines (both cities are located about 2 hours north of Denio).

Overview of Economy

The proportion of workers in the farming sector in Humboldt County (4.7%) substantially exceeds the farming employment proportion for Nevada as a whole (0.3%). This pattern is even more pronounced for Harney County (18.0%) as compared to Oregon (3.1%). The importance of mining to the Humboldt County economy is reflected in the high proportion of mining employment (17.1%). In Harney County, over a quarter of the workers are employed in government – a proportion substantially higher than Oregon and nation as a whole.

Economic Contribution from Livestock Industries

Information from the USDA provides additional detail on the economic contribution from the livestock industry. Based on data from the USDA's 2012 Census of Agriculture, Humboldt County ranked third among Nevada's 16 counties with respect to cattle and calves sales in 2012 (NASS, 2012). There were 32,454 cattle and calves sold from 359 ranches generating approximately \$ 32,897,000 in receipts or an average of \$91,635 per farm.

In terms of sheep, goats, and their products, Humboldt County ranked eighth in 2007 with the sales amounting to \$151 thousand generated by 26 ranches (NASS, 2007). The number of sheep and lambs sold in 2007 was not reported for Humboldt County to avoid disclosing data for individual farms; however, in 2002, 7,323 sheep and lambs were sold by Humboldt County ranches. The Nevada Agricultural Statistics 2011 Bulletin estimated the average value per head for sheep and lambs in Nevada to be \$143 in 2010 and \$183 in 2011.

Harney County was ranked third of out Oregon's 36 counties with respect to cattle and calves sales in 2012 (NASS, 2012). There were 51,065 cattle and calves sold from 497 ranches generating approximately \$51,857,000 in receipts or an average of \$104,340 per farm.

In terms of sheep, goats, and their products, Harney County had sales amounting to \$131,000 generated by 18 ranches (NASS, 2012). There were 1,401 sheep and lambs sold in 2012 in Harney County down from 5,983 in 2002.

The forage required to support the cattle and sheep industries comes from a combination of grazing on public and private lands and from grown or purchased hay.

In 2012, the inventory of cattle and calves in Humboldt County was 58,490. No numbers for the number of beef cows were given for 2012 (NASS, 2012).¹ There were 2,580 sheep and lambs in the county in 2012 of which 1,820 were over the age of one. An AUM represents the amount of dry forage required to sustain one cow and her calf pair or five sheep for one month. Therefore, in 2012, beef cows required an equivalent of over 500,000 AUMs and sheep required an equivalent of about 4,100 AUMs.

¹ The beef cow inventory represents the closest subset of the total cattle and calves inventory for the type of cattle that graze on public lands including the Pueblo Mountain Allotment.

Economic Contribution of Pueblo Mountain Allotment

As discussed in Section 2.3, grazing on the Pueblo Mountain Allotment is currently permitted to Moser Ranch, LLC. Under the current permit, BLM has authorized grazing of 2,137 AUMs, all of which are allocated to cattle. These AUMs provide one source of forage for this operation. The 2014 per AUM fee charged by BLM is \$1.35. BLM distributes grazing revenues generated from permits as follows: 50 percent goes to range betterment projects, 37.5 percent remains in the U.S. Treasury, and 12.5 percent is returned to the state. According to the USDA, in 2011, the grazing fees on private lands in Nevada were, on average, \$13 per AUM (NASS, 2012).²

The economic contribution attributable to grazing on BLM-administered lands directly relates to the forage it provides to ranching operations. The little over 2,000 AUMs for cattle grazing is only small fraction of the forage requirement for the beef cattle industry in Humboldt County (~500,000 AUMs). Therefore, the economic contribution resulting from the forage off this allotment is relatively small with respect to the beef cattle industry in the county.

In addition to direct economic impacts, the ranch provides secondary economic impacts resulting from supply purchases (such as hay, equipment, etc.) and from the labor income expenditures by ranch employees and by employees of suppliers. These secondary impacts likely support a handful of additional jobs in the region. The Pueblo Mountain Allotment provides a proportion of the forage needed to support this operation. Therefore, the forage from the allotment is an important input for this ranch and can thus be linked to the contribution of the ranch to the regional economy.

A large body of research has shown that public land permits increase the property value of the ranch holding the permit, in most cases. Various factors have been explored to explain this effect. Notably, the research has found that the added forage and relatively low permit fees for grazing on public lands do not entirely explain the increase in property value associated with the permit itself. Research has found that the added acreage associated with a public land permit is perceived as adding semi-private open space to the property and thus increasing the value of the ranch. Examples of this research include Rimbey, et. al. (2007) and Torell, et. al. (2005).

Social Value of Ranching

In addition to the contribution of ranching to the regional economy, ranching in the western U.S. often plays an important social role as residents of the rural west often identify with the tradition, land use, and history of ranching. Livestock grazing on public lands has and continues to be integral to ranching in western U.S.

3.13 Soils

The purpose of this section is to identify and describe soils for the assessment area. This was accomplished by extracting information from the Soil Survey of Humboldt County Nevada, West Part, 2003. For the purpose of this analysis the assessment area is the Pueblo Mountain

² Recent research has shown that, in spite of the difference in fees for grazing on public verse private land, when other factors are considered (such as animal loss, rangeland improvement, and herding), the cost of forage on public land compared to private land is generally similar. See Rimbey, N. and L.A. Torell, 2011.

Allotment. Multiple soil series and soil map units are contained within the Pueblo Mountain allotment. Table 3.9 identifies the most common:

Table 3.9: Pueblo Mountain Allotment Soil Map Units and Associated Descriptions

Soil Map Unit Name	General Description
Goldrun-Alvodest complex	composed primarily of fine sand and silty clay loam; parent material is volcanic ash and eolian sands, lacustrine deposits; typical vegetation is Indian ricegrass and basin big sagebrush, greasewood and basin wildrye.
Acrelane-Rock outcrop complex	composed primarily of acrelane very bouldery course sandy loam 15-50% slopes; parent material is weathered granite; typical vegetation is bluebunch wheatgrass, Thurber's needlegrass, Wyoming big sagebrush.
Longcreek-Cleavage association	composed primarily of very cobbly loam and extremely gravelly loam; parent material is weathered volcanic rock; typical vegetation is Idaho fescue, Sandburg's bluegrass, low sagebrush, Thurber's needlegrass, and bluebunch wheatgrass.
Shawave-Orovada complex	composed primarily of gravelly sandy loam; parent material is volcanic ash and mixed rocks; typical vegetation is Indian ricegrass, Thurber's needlegrass, Wyoming big sagebrush.
Longcreek-Rock outcrop complex	composed primarily of very cobbly loam, 50-75% slopes; parent material is volcanic rock; typical vegetation is bluebunch wheatgrass, big sagebrush, Thurber's needlegrass.
McConnel very stony sandy loam, 2 to 8 % slopes	composed primarily of McConnel very stony sandy loam, 2 to 8 percent slopes; parent material is volcanic rock; typical vegetation is spiny hopsage, Indian ricegrass and Thurber's needlegrass.
Wendane silt loam, 0 to 2 %slopes	composed primarily of Wendane silt loam, 0 to 2 percent slopes; parent material is mixed rock and volcanic ash; typical vegetation is black greasewood, basin wildrye, alkali sacaton.
Outerkirk sandy loam, 1 to 2 percent slopes	composed primarily of Outerkirk sandy loam, 1 to 2 percent slopes; parent material is mixed rock; typical vegetation is basin wildrye, black greasewood, big sagebrush.
Pickup-Bucklake-Puett complex	composed primarily of pickup very stony loam, bucklake very cobbly loam, and Puett very gravelly loam; parent materials are volcanic rock and tuff; typical vegetation is Lahontan sagebrush, bluebunch wheatgrass, Thurber's needlegrass, Wyoming sagebrush, and desert needlegrass.
Skedaddle-Rock outcrop association	composed primarily of Skedaddle very stony loam, 50-75 percent slope; parent material is basalt; typical vegetation is Thurber's needlegrass and Lahontan sagebrush.
Simon loam, 4 to 15 percent %	composed primarily of Simon loam, 4 to 15 percent slopes; parent material is volcanic rock and ash; typical vegetation is bluebunch wheatgrass, Thurber's needlegrass, big sagebrush.
Bucklake very cobbly loam, 8-50 % slopes	composed primarily of Bucklake very cobbly loam, 8-50 percent slopes; parent material is volcanic rock; typical vegetation is Wyoming sagebrush, Thurber's needlegrass, and bluebunch wheatgrass.

Biological soil crusts (BSC) are also present in this allotment. BSCs are important because:

1. Biological soil crusts are, literally, a carpet of photosynthetic life. That is one way to describe a healthy biological soil crust. In addition, they are also habitat for fauna that, in turn, contribute to the development of the crust.
2. They stabilize the soil. Some of the organisms secrete sticky substances (polysaccharides), which hold soil particles together.
3. Biological soil crusts make the soil more fertile. Most of the organisms associated with the biological soil crust are photosynthetic, particularly during cold, wet seasons when most plants are dormant. This means that the biological soil crust increases the length of the time during which organic carbon is added to topsoil. In addition, some cyanobacteria and lichens fix atmospheric nitrogen, even during the winter. Biological soil crusts can make other nutrients more available for use by grasses, forbs, and shrubs, as nutrients adhere to the aforementioned sticky substances, and are prevented from leaching.
4. Biological soil crusts may help the soil to retain more moisture. The extent to which this function occurs is highly dependent on both the composition of the crust and soil characteristics.
5. The nature of the crust itself can keep unwanted plants, such as invasive, non-native species and noxious weeds, out. Some of these invasive, non-native species include cheatgrass and medusahead wildrye, which can invade and dominate rangeland communities within relatively short time periods, particularly following disturbances such as wildfire. Native plants, which evolved with biological soil crusts, may have developed mechanisms to allow seeds to penetrate the crust (e.g. small size, or structures that "drill" them into the crust). Seeds of some non-native species are quite large and may not have a way of getting through the crust.
6. Because of their functions in rangeland systems, biological soil crusts have been adopted by scientists and land management professionals in the U.S., Australia, and South Africa as a visible indicator of rangeland health.
7. BSCs are least vulnerable to shearing and trampling from livestock when soils are moist and the most vulnerable when soils are dry. Surface rock fragments mitigate shearing and trampling by livestock throughout a large portion of the allotment.

The susceptibility to wind or water erosion or the erosion hazard ratings varies with geology, parent material, elevation, slope, aspect, vegetation cover, local microclimate, land use, and landscape history. Both wind and water erosion hazard rating are predominately low to moderate across the allotment. Surface erosion in this allotment would be the result from water on slopes and wind on the valley floors.

A total of 10 indicators for rangeland health were evaluated at each of the 7 evaluated sites for soils. The standards for rangeland health, Standard 1(soils) is currently making notable progress.

The measure of how well the indicators are being met is described as “the degree of departure from what is normal”. Soil and site stability was rated as None to Slight or Slight to Moderate for 50% of plots and Moderate for the other 50%. Points monitored in a Rangeland Health Assessment indicated that 7,512 acres out of 11,019 representative acres were given values that were within the Reference Site values for soil surface aggregate stability.

3.14 Special Status Species

Special status species include species listed or proposed for listing under the ESA as threatened or endangered, proposed species, candidate species, and species included on the BLM’s sensitive species list for Nevada (NV-2003-097). Candidate species are those species or subspecies (i.e., taxa) that may warrant listing as threatened or endangered; there is sufficient information on biological vulnerability and threat(s) to support a rule to list these species as threatened or endangered, but the issuance of a proposed rule to list is precluded by higher listing priorities. Proposed species are taxa for which a proposal to list the species as threatened or endangered has been published in the Federal Register.

Sensitive species are taxa that are not already included as BLM special status species under (1) federally listed, proposed, or candidate species or (2) State of Nevada listed species. The BLM policy in the BLM manual 6840.06 states, "Actions authorized by the BLM shall further the conservation and/or recovery of federally listed species and conservation of Bureau sensitive species. Bureau sensitive species would be managed consistent with species and habitat management objective in land use and implementation plans to promote their conservation and to minimize the likelihood and need for listing under the Endangered Species Act of 1971, as amended under the ESA." The BLM affords these species the same level of protection as federal candidate species. The BLM’s policy for sensitive species is to avoid authorizing actions that would contribute to listing a species as threatened or endangered.

Several databases were consulted for the presence of endangered, threatened, candidate, and BLM designated sensitive species including: the Nevada Natural Heritage Program (NNHP) database (2011), the Nevada Department of Wildlife (NDOW) Diversity database (2011), NDOW Bighorn Habitat GIS layer (2011), NDOW Raptor Nest Sites GIS layer (2011), NDOW Sage Grouse Habitat and Sage Grouse Leaks GIS layers (2011), and the Great Basin Bird Observatory (GBBO) Final Atlas Data Distribution database (2011).

Greater sage-grouse

The greater sage-grouse has been designated a sensitive species by the BLM and a candidate species by the USFWS and is known to occur on this allotment. The greater sage-grouse use a variety of habitats throughout the year for lekking sites, nesting, brood rearing, and winter. Lek sizes are typically from 0.04-4.0 ha and are found between 4,500 to > 10,000 ft. in elevation in relatively open sites within or adjacent to sagebrush dominated habitats. General habitat suitability of lekking sites include a slope of <10% in areas that get >25cm of precipitation and are <2km from water. Nesting sites are typically found in broad areas dominated by sagebrush with horizontal & structural diversity (Connelly et al. 2000). Nest sites typically have larger bushes, higher canopy coverage, more grass coverage, and less bare ground. Brood Rearing areas are dominated by sagebrush with greater perennial forbs and higher richness of plant species.

Sage-grouse usually move up in elevation during late spring & early summer to areas that have increased precipitation and forbs (e.g., mountain meadows, springs, and riparian areas). Sage-grouse winter habitat is either found within other seasonal ranges or separate and are dominated by big, low, or black sagebrush communities.

The project does not fall into any Population Management Units (PMUs), PPH or PGH. However, the area does contain core breeding, nesting, and winter habitat and historically active leks have been found on the allotment. The upper elevation pastures (Alberson Basin, Pueblo Mountain, and Denio Basin) are dominated by the sagebrush habitat types preferred by sage-grouse and there are large amounts of PPH and PGH within 5 miles of the allotment (to the east and south). Large fires in 2012 (i.e., the Holloway fire) occurred in these PPH and PGH areas to the east of the allotment and may have driven more grouse into the area.

Western burrowing owl

Burrowing owls are well documented in the WD (NDOW Diversity database 2011, and GBBO Final Atlas Data Distribution database 2011). Burrowing owls prefer open, arid, treeless landscapes with low vegetation. Burrowing mammal populations provide nesting habitat and owls choose nesting areas based on burrow availability (Floyd et al. 2007). Dense stands of grasses and forbs within owl home ranges support populations of rodent and insect prey. Burrowing owls are highly adaptable and readily nest in open disturbed areas such as golf-courses, runways, and industrial areas that border suitable habitat (Neel, 1999). Therefore, we will analyze potential impacts of the proposed action, no action, and alternatives to burrowing owl habitat.

Brewer's sparrow

Brewer's sparrows are considered sagebrush obligates, but may use other shrubland habitat types such as salt desert scrub. Brewer's sparrow is described by Floyd et al. (2007) as one of the most common birds found in northern Nevada shrublands; however populations may be declining due to loss and degradation of sagebrush habitat.

The NDOW Diversity database (2011) and the GBBO Final Atlas Data Distribution database (2011) show a combined nineteen documented occurrences for this bird in the Allotment area. Brewer's Sparrows prefer extensive areas of sagebrush habitat that are maintained with shrubs occurring in tall, clumped, and vigorous stands. They place their nests low in sagebrush (preferred), other shrubs, or cactus, from a few centimeters to about one meter from ground. However, they also sometimes place nests higher in taller sagebrush (Rich 1980). The Brewer's sparrow mainly forages for insects on the ground. Because Brewer's sparrow forage and nest near the ground and populations may be declining due to loss and degradation of sagebrush habitat, we will analyze potential impacts of the alternatives to their habitat and they will be grouped with other sage-brush related sensitive bird species.

Loggerhead shrike

Several observations of this bird are documented in the allotment area (NDOW Diversity database 2011, and GBBO Final Atlas Data Distribution database 2011). Loggerhead shrikes may be found in sagebrush/bunchgrass and salt desert scrub vegetative communities. Loggerhead shrikes tend to favor arid, open country with just a few perches or lookouts. They nest in isolated trees and large shrubs and feed mainly on small vertebrates and insects. The species is relatively

common and well distributed across the state (Neel 1999). These birds benefit from habitat with a diverse structure and species composition and healthy sagebrush communities provide these habitat characteristics. According to Paige and Ritter (1999), “Long-term heavy grazing may ultimately reduce prey habitat and degrade the vegetation structure for nesting and roosting. Light to moderate grazing may provide open foraging habitat”. Therefore, we will analyze potential impacts of the alternatives to their habitat.

Snowy plover

There are areas in the southern portion of the allotment that are classified as wetlands by the National Land Cover Data and the U.S. Geological Survey database, so there is a possibility that plovers can be found nesting in the area. However, in Nevada, this bird prefers to nest out in the open in hypersaline playas with minimum vegetation and feed largely on brine flies (Floyd et al. 2007). These are areas, not likely frequented by grazing cattle. In addition, the last documented sighting of this bird was in the playa in the southern portion of the allotment in 1991 (NNHP database). Therefore, this species is dismissed from further analysis.

Lewis's Woodpecker

Key habitat factors for Lewis's woodpecker include the presence of large, partly-decayed snags, an open forest structure for aerial foraging, and a well-developed shrub or native herbaceous layer that promotes healthy populations of flying insects (Abele et al. 2004). Stand level characteristics include open ponderosa pine forests, open riparian woodlands dominated by cottonwood, and logged or burned conifer. Lewis's woodpecker is no longer known to breed in the valley-bottom riparian woodlands where they are thought to have historically occurred. In Nevada, however, this species is most strongly associated with deciduous riparian woodlands dominated by aspen or cottonwood. These habitat types are found in the Denio Basin and Pueblo Mountain pastures. Therefore, we will analyze potential impacts of the alternatives to their habitat and they will be grouped with other sensitive riparian bird species.

Sage Thrasher

In the northern Great Basin, the sage thrasher breeds and forages in tall sagebrush/bunchgrass, juniper/sagebrush/bunchgrass, mountain mahogany/shrub, and aspen/sagebrush/bunchgrass communities (Maser et al. 1984). Studies have found a positive correlation between the sage thrasher and with shrub cover, shrub height, bare ground, and horizontal heterogeneity (patchiness) and negative correlations with spiny hopsage, budsage, and grass cover (Rotenberry and Wiens 1980, Wiens and Rotenberry 1981). In winter, the sage thrasher uses arid and semi-arid scrub, brush and thickets. The sage thrasher feeds on a wide variety of insects, including grasshoppers, beetles, weevils, ants, and bees as well as fruits and berries. Conservation challenges for this species includes loss, degradation, or fragmentation of high-quality sagebrush shrubland due to fire, invasive plants, expansion of pinyon-juniper woodland into sagebrush, improper livestock grazing and excessive OHV use (GBBO 2010). Therefore, we will analyze potential impacts of the proposed action, no action, and alternatives to their habitat and they will be grouped with other sage-brush related sensitive bird species.

Ferruginous Hawk

Ferruginous hawks prey primarily on mammals during the breeding season, although birds, amphibians, reptiles, and insects are also part of their diet (Weston 1968, Howard 1975, Fitzner

et al. 1977, Blair 1978, Smith and Murphy 1978, Gilmer and Stewart 1983, Palmer 1988, De Smet and Conrad 1991, Atkinson 1992). Jack rabbits, ground squirrels, and pocket gophers are the primary prey species in western shrub-steppe communities (Smith and Murphy 1978, Bechard and Schmutz 1995).

Habitat includes open country, sagebrush, saltbush-greasewood shrubland, and the periphery of pinyon-juniper and other woodland and desert communities. In Nevada, ferruginous hawks nest in live juniper trees, on tufa stacks and rock outcrops, power line towers, on the ground under thick brush and lone or peripheral trees (preferred over densely wooded areas) (Weston 1968, Lokemoen and Duebbert 1976, Gilmer and Stewart 1983, Wofinden and Murphy 1983, Palmer 1988, Bechard et al. 1990). Direct impacts to nests of species that nest in cliffs or trees would likely not occur since these areas are inaccessible to livestock. Thus, grazing is not likely to interfere with nesting activities. Due to this and their adaptability to a wide variety of land use and habitat cover types as well as their continued presence in the area despite continued grazing since the 1990's, this species is dismissed from further analysis.

Swainson's Hawk

Swainson's Hawks have adapted to agricultural landscapes in Nevada and landscape features consist of large riparian nesting trees, agricultural fields, and open shrublands within relatively close proximity (GBBO 2010). Swainson's Hawks in the Great Basin occupy the Juniper/Sagebrush community typical to the area. These hawks feed primarily on small mammals during the breeding season and invertebrates (especially crickets and grasshoppers) are common food at other times. Mammals consumed include ground squirrels and pocket gophers, but will also eat other small mammals, snakes, lizards, birds, amphibians, and some carrion. Direct impacts to nests of species that nest in cliffs or trees would not occur since these areas are inaccessible to livestock. Thus, grazing is not likely to interfere with nesting activities. Due to this and their adaptability to agricultural landscapes as well as their continued presence in the area despite continued grazing since the 1990's, this species is dismissed from further analysis.

Peregrine Falcon

In Nevada, Peregrine Falcons nest on rocky cliffs or crags and also use ledges of city high-rise buildings. These falcons forage in open environments that are in close association with suitable nesting habitat and include open water, desert shrub, open forests, and marshes. These falcons feed primarily on birds (medium-size passerines up to small waterfowl), but will also feed on small mammals (including bats), lizards, fishes, and insects. Direct impacts to nests of species that nest in cliffs or trees would not occur since these areas are inaccessible to livestock. Thus, grazing is not likely to interfere with nesting activities. In addition, there are no known nests in the area and peregrines can feed on a variety of prey and can hunt up to several km from their nest sites (Skaggs et al. 1988). Therefore this species is dismissed from further analysis.

Golden Eagle

Golden eagles have been documented within 2.5 miles of the allotment and a historic nest is located within 1.5 miles. Golden eagles nest in crags, canyons, cliffs, and mountains and come down to valleys to hunt. Thus, they may utilize the area to forage for prey species such as jackrabbits and other small mammals. Nevada's golden eagle population is thought to be stable to increasing and they are widespread and frequently encountered (Floyd et al. 2007). Direct impacts to nests of species that nest in cliffs or trees would not occur since these areas are

inaccessible to livestock. Thus, grazing is not likely to interfere with nesting activities. Because of this and their continued presence in the area despite continued grazing since the 1990's, this species is dismissed from further analysis.

Northern Goshawk

In Nevada, goshawks typically nest in aspen stands found in mountain streams and ephemeral drainages and forage in open sagebrush (*Artemisia* spp.) adjacent to riparian aspen stands. They can also be found in other riparian woodlands, pinyon-juniper woodlands, montane forests, and parklands. Most goshawk nests occur in mature trees occurring in stands with a closed canopy with little understory (DeStefano and McCloskey 1997). Nests in Nevada are typically located within 100 meters of water and located on southern aspects and topographic benches. Ground squirrels are the main prey species during the nesting season, but they readily prey on small birds as well (Neel, 1999). Goshawks nests in a wide variety of forest types including deciduous, coniferous, mixed forests, and forests dominated by aspen (*Populus tremuloides*), paper birch (*Betula papyrifera*), or willow (*Salix* spp.) (Bechard et al. 2006). Goshawk sightings have been documented within 10 miles of the allotment and their preferred habitat characteristics are found in the Denio Basin and Pueblo Mountain pastures. Therefore, we will analyze potential impacts of the proposed alternatives to their habitat and they will be grouped with other sensitive riparian bird species.

Columbia Spotted Frog

Columbia spotted frogs are closely associated with clear, slow-moving or ponded surface waters, with little shade, and relatively constant water temperatures. Breeding and egg-laying occurs in waters with floating vegetation and larger ponds such as oxbows, lakes, stock ponds, and beaver-created ponds. Females usually lay egg masses in the warmest areas of the pond, typically in shallow water. During and after rain, they may move away from permanent water to feed in wet vegetation or ephemeral puddles. Adults also feed upon mollusks, crustaceans, and arachnids. They are thought to be opportunistic feeders and feed underwater to some extent. Green algae (e.g., *Spirogyra*) and decomposed plant material provides a food source and refuge for developing tadpoles. Abundance may be tied to beaver ponds in some locations; when beavers decrease, frogs may decrease as well (Spotted Frog Mtg, Reno 2002, USFWS 1997a, Candidate Notice of Review USFWS 2011c). Potential anthropogenic impacts to spotted frog populations include livestock grazing and water development. Therefore, we will analyze potential impacts of the alternatives to their habitat.

Bleached Sandhill Skipper

This particular species of butterfly has been found at the south end of the Pueblo Slough in the Baltazor Hot Springs drainage system which is located in the Continental pasture. However, little is known about the Bleached Sandhill Skipper (BSS) and the USFWS (Federal Register volume 77, No. 171, September 4, 2012) suggests that other areas of the Baltazor Hot Springs drainage system may contain the BSS, but have not been surveyed. These areas could include the entire Pueblo Slough area which is contained within the Continental, Chokecherry, Black Mountain, and Cowden pastures. According to the USFWS (Federal Register volume 77, No. 171, September 4, 2012), the BSS is associated with salt flat areas and is known to fly during late August to mid-September. Salt grass (*Distichlis spicata*) is thought to be the larval host plant and the BSS nectars on white and yellow composites (Federal Register volume 77, No. 171, September 4, 2012). According to the USFWS (Federal Register volume 77, No. 171, September

4, 2012.), the best available evidence could not determine whether or not grazing and water development has impacted the skipper's habitat or populations. Therefore, we will analyze potential impacts of the alternatives to their habitat.

Bats

Several species of bats may occur in the allotment. Most bats in Nevada are year-round residents. In general, bats eat insects and arthropods during the warmer seasons and hibernate in underground structures during the cooler seasons. Bats commonly roost in caves, mines, outcrops, buildings, trees, and under bridges. Bats thrive where plant communities are healthy enough to support a large population of prey (Bradley et al. 2006). Healthy riparian communities with high water tables and tall vegetation support large flying insect populations, which provide favorable foraging habitat for bats.

Townsend's big-eared bats - These bats use caves, buildings, and tree cavities for night roosts and occupy a broad range of habitats throughout much of their known range, but commonly occur in mesic habitats characterized by coniferous and deciduous forests.

Western small-footed bats-These bats generally inhabit desert, badland, and semiarid habitats. In summer, these bats roost in rock crevices, caves, tunnels, under boulders, beneath loose bark, or in buildings. Western small-footed bats hibernate in caves and mines and maternity colonies are often located in abandoned houses, barns, or similar structures.

Big brown bats - These bats inhabit various wooded and semi-open habitats and use caves, mines, and buildings for hibernation. In summer, these bats roost in buildings, hollow trees, rock crevices, tunnels, and cliff swallow nests and prefer sites that do not get hot. Big brown bats maternity colonies form in attics, barns and occasionally tree cavities.

Hoary Bats - Hoary bats prefer to roost in tree foliage 3-5 m above ground, with dense foliage above and open flying room below, often at the edge of a clearing and commonly in hedgerow trees. These bats roost in rock crevices, but rarely use caves in most of range. Hoary bats hibernate in trees and occasionally rock crevices and solitary females with young roost among tree foliage.

Long-legged myotis - The long-legged myotis can be found in montane forest, riparian, and desert habitats, and typically hibernates in mines and caves, but winter habits are poorly known. These bats roost in abandoned buildings, rock crevices, caves, tunnels, under boulders and bridges, beneath loose bark, or in buildings. In summer, the long-legged myotis apparently does not use caves as daytime roost site. In some areas, hollow trees are the most common nursery sites, but buildings and rock crevices are also used.

Pygmy rabbit

In the Great Basin, pygmy rabbit burrows are typically found under taller and denser big sagebrush and occur in areas with loamy soils deeper than 20 inches and with 13-30% clay content. Pygmy rabbits use various subspecies of sagebrush and other shrub species may be present including bitterbrush, rabbitbrush, snowberry, juniper, and greasewood. At the landscape scale, preferred locations for burrows include broad valley floors, drainage bottoms, alluvial fans, and other areas with friable soils. A dietary study of pygmy rabbits showed dependence on

sagebrush year round. Sagebrush made up about 51% of the diet in summer and 99% in the winter. Grasses and forbs were also consumed in the summer (Green and Flinders 1980).

Bighorn Sheep

The California bighorn sheep (*Ovis canadensis nelsoni*) is considered a BLM sensitive species. The allotment contains occupied bighorn sheep habitat within both the Pueblo Mountains and Pine Forest ranges. From Black Mountain to the south edge of the allotment within the Pine Forest Range and from Continental Lake to the north end of the allotment are considered to be occupied bighorn sheep habitat. According to the NDOW database, there is year round habitat within the Denio Basin, Pueblo Mountain, Alberson Basin, Chokecherry, Cowden, and Black Mountain pastures.

Soldier Meadow cinquefoil (*Potentilla basaltica*)

The Soldier Meadow cinquefoil was placed on the candidate species list in 2002 by the USFWS. The range of this plant includes Humboldt County, Nevada, but has only been found twice in the Soldier Meadows area in the northern Black Rock Desert. Surveys in Nevada are mostly complete, but some potential habitat remains unexamined and the plant has recently been identified in previously unknown locations in California. Habitat for this plant includes moist salt-crust clay in alkaline meadows, cooled outflow stream margins, and thermal springs and is aquatic or wetland-dependent in Nevada. Conservation challenges include off-road vehicle use, water diversions, alteration of hydrology, competition with invasive weeds, and livestock grazing.

Dainty moonwort (*Botrychium crenulatum*)

This plant has not been found within the Winnemucca District. However, the plant is aquatic or wetland-dependent and has not been systematically surveyed, so it has the potential to occur on the Pueblo Mountain Allotment.

Pueblo Valley peppergrass (*Lepidium montanum* var. *nevadense*)

A literature search of sensitive plants listed on the Nevada Natural Heritage Program website found that this plant is endemic to Pueblo Valley and its drainage to the southwest. It occurs from northeast of Denio in Harney County, Oregon southwest to just north of Gridley Lake in Humboldt County, Nevada. The habitat for this species includes sand dunes or deep sand between 1275 – 1330 meters above sea level.

Other Plant and Wildlife Species

An allotment-wide inventory has not been completed but habitat exists such that other sensitive species may be present on the allotment. Since inventory information is not available for each species, we will assume that potential impacts to their habitats and populations will be similar to those addressed in the following sections under the Special Status Species section: sensitive ground nesting and upland birds, sensitive riparian nesting birds, sensitive amphibians, sensitive insects, sensitive mammals, and sensitive plants.

3.15 Vegetation

Potential vegetation communities have been derived from information extracted from the Soil Survey of Humboldt County Nevada, West Part, 2003, and supporting Ecological Site

Descriptions (ESDs) for Major Land Resource Areas (MLRA) 23 and 24. See above descriptions of vegetation to specific soils under the Soils section 3.1.3 listed above.

Potential perennial grasses include Indian ricegrass (*Oryzopsis hymenioides*), Idaho fescue (*Festuca idahoensis*), Thurber's needlegrass (*Achnatherum thurberianum*), bluebunch wheatgrass (*Pseudoroegneria spicata*), basin wildrye (*Leymus cinereus*), and needle-and-thread (*Hesperostipa comata*). Shrub components include black greasewood (*Sarcobatus vermiculatus*), Wyoming big sagebrush (*Artemisia tridentata* Nutt. ssp. *Wyomingensis*), basin big sagebrush (*Artemisia tridentata* Nutt. ssp. *Tridentata*), low sagebrush (*Artemisia arbuscula*), shadscale (*Atriplex confertifolia*), and bud sagebrush (*Picrothamnus desertorum*).

Table 3.10 shows the critical growth period for key plant species within the Pueblo Mountain Allotment:

Table 3.10: The Critical Growth Period of Key Management Species*

Common Name	Scientific Name	Critical Growth Period	
Basin wildrye	<i>Elymus cinereus</i>	5/1	7/30
Indian ricegrass	<i>Oryzopsis hymeniodes</i>	4/15	7/15
Thurber's needlegrass	<i>Achnatherum thurberianum</i>	5/1	7/15
Crested wheatgrass	<i>Agropyron cristatum</i>	5/1	6/30
Bud sagebrush	<i>Artemisia spinescens</i>	3/1	5/30
Winterfat	<i>Krascheninnikovia lanata</i>	3/1	9/30
Tapertip hawksbeard	<i>Crepis acuminata</i>	4/15	6/30
Globemallow	<i>Sphaeralcea spp.</i>	4/15	6/30
Needle-and-thread	<i>Hesperostipa comata</i>	5/1	7/15
Bluebunch wheatgrass	<i>Pseudoroegneria spicata</i>	5/1	7/15
Idaho fescue	<i>Festuca idahoensis</i>	5/15	7/31
Forage kochia	<i>Kochia prostrata</i>	Spring - summer	
* BLM (1982b)			

Standard 4 is defined as: Populations and communities of native plant species and habitats for native animal species are healthy, productive and diverse.

Indicators for Standard 4: Plant and Animal Habitat are:

1. Good representation of life forms and numbers of species
2. Good diversity of height, size and distribution of plants
3. Number of wood stalks, seed stalks, and seed production adequate for stand maintenance
4. Vegetative mosaic, vegetative corridors for wildlife, and minimal habitat fragmentation

Monitoring and professional observation have shown that the allotment is meeting this standard. Most of the vegetation communities on the Pueblo Mountain Allotment are characterized by

sagebrush/desert shrub species that include: big sagebrush, shadscale, greasewood, Wyoming sagebrush, Indian ricegrass, basin wildrye, Thurber's needlegrass and bluebunch wheatgrass. There is minimal habitat fragmentation within the Pueblo Mountain Allotment. The only agency-enforced barriers are allotment and pasture fencelines. All fences are built to the proper wildlife specifications. Upland utilization monitoring has shown a "slight" or "light" rating for livestock use over the past 10-12 years (table 3.11).

There are 258 cattle in the Pueblo Mountain allotment from the beginning of April to the end of August, and again from the beginning of October to the beginning part of January. The herd is on a three-year pasture rest-rotation system, generally working their way from the lower to the higher elevation pastures. A separate lower-elevation pasture is used during the winter months. Post-grazing utilization of upland species was monitored within the allotment and varied from 20-60% (Slight to Moderate categories).

Table 3.11: Actual utilization of the seven pastures in the Pueblo Mountain Allotment

Pasture	Year	Utilization
Pueblo Mountain	2001	40% (Light)
	2003	40% (Light)
	2004	40% (Light)
	2006	20% (Slight)
Denio Basin	2002	40% (Light)
	2004	40% (Light)
	2005	40% (Light)
	2011	40% (Light)
Alberson Basin	2001	40% (Light)
	2002	40% (Light)
	2003	60% (Moderate)
	2005	20% (Slight)
	2011	20% (Slight)
Black Mountain	2001	40% (Light)
	2002	60% (Moderate)
	2004	40% (Light)
Continental	2002	40% (Light)
Chokecherry	2003	40% (Light)
	2011	60% (Moderate)
Cowden	2002	20% (Slight)
	2005	20% (Slight)
	2011	20% (Slight)

3.16 Wilderness Study Areas

Section 603(c) of FLPMA requires WSAs be managed in a manner so as not to impair the suitability for these areas for preservation as wilderness. The BLM's management policy is to continue resource uses on lands designated as WSAs in a manner that maintains the area's suitability for preservation as wilderness. The BLM will protect the wilderness characteristics of

all WSAs in the same or better condition than they were at the time of designation. This protection will continue until Congress determines whether or not the WSA should be designated as wilderness (BLM 2012b).

The Pueblo Mountains WSA OR-2-81/NV-020-642 is located approximately 100 miles north of Winnemucca, Nevada and 5 miles south of Fields, Oregon. The WSA is an irregularly shaped area containing over 72,690 acres of public land. At the extremes, the area is 15 miles long and 11 miles wide. Elevations range from 4,200 to 8,634 feet (Pueblo Mountain). The boundary is formed by a combination of private land, BLM dirt roads, a paved county road (east side only), and legal subdivisions.

In the Nevada State Wilderness Report (1991), the core area of the WSA was recommended for wilderness designation due to the high quality wilderness values and special features within a unit capable of being managed to preserve these qualities. The remaining area was recommended to be released for other uses than wilderness. (map 10: Pueblo Mountain WSA). The wilderness characteristics considered for this recommendation were the area's naturalness and outstanding opportunities for solitude. The latter made possible by the rugged ridgelines, steep escarpments, and deeply incised drainages. Vegetative screening also lends to the opportunities for solitude. The area recommended for release was based on potential conflicts with other resource uses, including livestock management, development of new range improvements and mineral development potential. In 2001 the BLM issued the Nevada Wilderness Study Area Notebook that identified the portion of the WSA within the Winnemucca District as being non-suitable.

Developments in the entire WSA include vehicle ways (totaling 33 miles), 18 areas of past mining activity, six reservoirs, six developed springs, three fences (totaling four miles), four ditches (totaling four miles), two dumps, a power-line (four miles), and a cemetery. Approximately 4 percent of the WSA is influenced by these features.

Of the total WSA, 5,516 acres are located within the Pueblo Mountain Allotment (621 acres in Nevada, 4,980 acres in Oregon). This represents approximately 16% of the total public acres within the allotment. Table 3.12 shows Pueblo Allotment's range improvements in the WSA.

Table 3.12: Allotment Range Improvements within the Pueblo Mountain WSA

Project name (number)	Location start (UTMs)	Location end (UTMs)	Length (mi.)
Stateline Spring (no #)	357923.657 4655180.082	N/A	N/A
Pueblo Mountain Cross fence (524039)	359037.408 4652146.469	361618.242 4654478.276 (Outside WSA)	2.58
Allotment fence (no #)	362863.382 4655180.082	361437.131 4655949.804	1.10
Allotment fence (no #)	357452.685 4650516.469	357633.796 4651195.636	0.39

Project name (number)	Location start (UTMs)	Location end (UTMs)	Length (mi.)
Allotment fence (no #)	363951 4652530	364701 4651354	0.85
Pueblo Mountain Fence (520167)	357316.852 4647935.635	357452.685 4650516.469	2.30
Pueblo Mountain Fence (no #)	364629.216 4651354.108	363950.049 4652531.331	0.73
Fence around inholding	360899 4654268	359324 465581	4.00

In accordance with an inter-district agreement with the Burns Field Office in Oregon, the Winnemucca District manages livestock grazing within the Pueblo Mountain Allotment, but the Burns Field Office, Oregon manages the WSA. Livestock grazing has been a continued use in this WSA since the mid 1860's.

3.17 Wildlife

The project area provides habitat for species common to the Great Basin. Although no formal surveys were conducted, the Pueblo Mountain Allotment provides habitat for several general wildlife species. Some of the large mammal species would include mule deer (*Odocoileus hemionus*), pronghorn (*Antilocapra americana*), mountain lion (*Felis concolor*), bobcat (*Lynx rufus*), black-tailed jackrabbit (*Lepus californicus*), coyote (*Canis latrans*), and badger (*Taxidea taxus*). In addition, various small mammals, amphibians, mollusk, and reptiles may also be found in the project areas. Wildlife habitats within the allotment have been impacted through wildfire and various multiple uses such as, recreational activities, transportation/access and livestock grazing.

Mule Deer

The mule deer habitat on the Pueblo Mountain Allotment has been classified as year round in the Alberson Basin, Chokecherry, Denio Basin, Pueblo Mountain, and Cowden pastures.

In the allotment, mountain big sagebrush (*Artemisia tridentata* var. *vaseyana*) and snowberry (*Symphoricarpos albus*) are important browse species. In the lower elevation year round range, Wyoming sagebrush (*Artemisia tridentata* var. *wyomingensis*) is probably the most important browse species. Perennial grasses such as blue grass (*Poa spp.*), bluebunch wheatgrass (*Pseudoroegneria spicata*), bottlebrush squirreltail (*Elymus elymoides*) and Thurber's needlegrass (*Achnatherum thurberianum*) are important when they are green in spring and early summer and in the winter when they are not covered by deep snow. These perennial grasses provide diversity in the mule deer's diet. The Paradise-Denio Management Framework Plan set the forage allocation for mule deer at 84 AUMs.

Pronghorn Antelope

Pronghorn antelope habitat on the allotment has been classified as low density in the Alberson Basin, Chokecherry, Continental, Cowden, and portions of the Black Mountain pastures. The remaining portion of the Black Mountain pasture is classified as Rangelands with a mixture of grasses, forbs, and shrubs provide the best habitat for pronghorns. Pronghorn seem to prefer habitats with shrub heights between 10-25 inches. Some of the allotment is dominated by big sagebrush with the average height approaching or exceeding the 25 inch threshold.

4.0 ENVIRONMENTAL CONSEQUENCES

The direct and indirect impacts relative to each alternative will be disclosed first by supplemental authorities and then additional affected resources. Cumulative analysis follows the direct and indirect analysis in this chapter.

4.1 Direct and Indirect Impacts

Supplemental Authorities

4.1.1 Cultural Resources

No Action

Impacts to cultural resources under the No Action Alternative would be similar to those under the proposed action. The No Action Alternative is not expected to result in impacts to cultural resources over levels that currently occur today or were experienced historically on the allotment.

Proposed Action

Because many of the cultural resource sites in the Pueblo Mountain Allotment are situated on or just below the ground surface, they are susceptible to disturbance or destruction by erosion and weathering processes. While these processes occur naturally, the reduction in vegetative cover and soil disturbances resulting from ungulate grazing accelerates these processes, resulting in deterioration of cultural resource sites. In areas where there are concentrations of livestock utilization, cultural resources can also be damaged by trampling. Areas in the vicinity of permanent and intermittent water sources (i.e. Denio Creek) have the highest potential for cultural resource sites. Impacts to cultural resource sites from grazing and trampling include modification, displacement and increased erosion of artifacts, features and organic middens. This can result in the loss of valuable information regarding site function, dates of use, plants and animals utilized and past environments (Horne and McFarland 1993).

Under the proposed action, livestock use (AUMs) would remain the same as under the current permit. Use in the Denio Basin and Pueblo Mountain pastures would remain at 3 weeks, keeping the potential for erosion in these pastures at current levels. Adherence to the proposed terms and conditions or changes to authorized use if terms and conditions are not met would reduce or remediate these impacts.

A heavy use area in a potentially culturally sensitive area was identified on Denio Creek, but no evidence of cultural resources has been found in this area. This may be due to the fact there was a major flood event in 2009 which would have washed surface artifacts downstream and/or possibly buried artifacts features under several inches of silt. There is also heavy vegetation in this area. It is likely that any remaining intact cultural resource sites in this area would be protected by the layer of silt and also buffered from trampling damage by the heavy vegetation. Therefore, no increase in impacts to cultural resources from livestock trampling or erosion are anticipated as a result of the proposed action.

Two new cattleguards are proposed in Pueblo Mountain Pasture in the proposed action. No direct impacts to cultural resources are anticipated from the proposed installation of the cattleguards since they are being placed in existing roads. The cattleguards would replace existing gates that have frequently been left open by recreationists, allowing cattle to enter the pasture when it is closed. It is anticipated that the cattleguards would therefore help reduce impacts to cultural resources in this pasture from trampling and erosion.

Denio Creek Exclosure Alternative

The impacts to cultural resources under this alternative would be similar to those under the proposed action, except that any undiscovered cultural resources within the exclosure fence would receive additional protection. Livestock trailing impacts can occur along fencelines such as the proposed exclosure fence. However, since a Class III inventory would be completed along the fenceline and all NRHP eligible sites would be avoided, no additional impacts are anticipated to the fence as a result of the exclosure fence.

Reduced Grazing Alternative (Maximum Reduction) Alternative

This Alternative would have a beneficial effect on cultural resource values by eliminating a source of impacts.

4.1.2 Invasive, Non-Native Species

No Action

Under this alternative, the overall risk to the landscape from the introduction and establishment of noxious weeds and other non-native invasive species would be greater than the overall risk presented by the proposed action. Currently, the grazing permittee is not held responsible for noxious weed treatment at livestock water improvements, which are areas which have a high probability of noxious weed establishment over time. Other vectors of seed transport and other mechanisms of disturbance which would allow for the introduction of noxious weeds and invasive non-native species would persist. These vectors and mechanisms of disturbance would include use by multiple wildlife species and feral horses, natural processes such as fire, wind, and water movement, and human activities including camping, hiking, OHV use, road maintenance and other activities.

Proposed Action

Under the proposed action, livestock use would occur at very similar levels to those occurring under the expiring permit. The proposed action provides for a rest/use rotation which would allow for native and other desirable perennial plants to persist at or above current population levels. The continued presence of native and other desirable perennial plants in riparian and

upland areas would maintain ecological resistance to invasion by noxious and other non-native invasive species. Livestock grazing can create soil disturbance which in turn provides opportunity for the establishment of noxious weeds. Livestock can also serve as vectors for noxious weed seed transport which can deliver weed seeds to areas of disturbance which are not yet infested with noxious weeds. Livestock disturbance is distributed irregularly across the landscape, with most disturbances occurring near watering facilities, streams and springs, and around roads, fencelines, and trailing routes. The continued presence of livestock use on the Pueblo Mountain Allotment would maintain a risk of noxious weed introduction and establishment within the allotment. That risk would be reduced under the proposed action compared with current use, since the grazing permittee would be required to inventory, treat, and monitor areas near livestock water improvements, which are areas which have a high probability of noxious weed establishment and could represent an increased risk of subsequent seed transport to the allotment at large.

Denio Creek Enclosure Alternative

Under this alternative the overall risk to the portions of the Denio Creek riparian area within the enclosure from the introduction and establishment of noxious weeds and other non-native invasive species would be reduced, since livestock-related disturbance within those areas would be eliminated. The construction of a new fenceline near the riparian area would result in a greatly increased risk of introduction and establishment of noxious weeds and other non-native invasive species immediately adjacent to the new fenceline, since livestock could reasonably be expected to congregate near the riparian enclosure fence, resulting in locally increased disturbance and an increased presence of livestock, which are a potential vector of seed transport. The overall potential for introduction or establishment of noxious weeds or other non-native invasive plants throughout the rest of the Pueblo Mountain Allotment would be reduced, when compared with current use, since the grazing permittee would be required to inventory, treat, and monitor areas near livestock water improvements, which are areas which have a high probability of noxious weed establishment and could represent an increased risk of subsequent seed transport to the allotment at large.

Reduced Grazing (Maximum Reduction) Alternative

Under this alternative, the overall risk to the landscape from the introduction and establishment of noxious weeds and other non-native invasive species would be reduced, since disturbance impacts from livestock use would be eliminated. Other vectors of seed transport and other mechanisms of disturbance which would allow for the introduction of noxious weeds and invasive non-native species would persist. These vectors and mechanisms of disturbance would include use by multiple wildlife species and wild horses, natural processes such as fire, wind, and water movement, and human activities including camping, hiking, OHV use, road maintenance and other activities.

4.1.3 Migratory Birds

No Action

Implementation of this alternative would maintain the current grazing schedule that has operated since 1999. Again, several studies show that changing grazing strategies (e.g., from continuous use to rest and rotation, reduced hot-season/growing season grazing, and earlier turnout dates)

can have a positive effect on riparian restoration and long-term recovery of important soil and vegetative attributes important to migratory birds (Booth et al. 2012, Dalldorf et al. 2013). Alternatively, no change in grazing strategy is likely to have, at best, a neutral effect on migratory birds and more likely a negative, long-term effect that has not yet been observed.

Proposed Action

Over grazing in general can be detrimental to certain migratory birds either by direct impacts such as trampling the eggs of ground nesters or loss, degradation, or fragmentation of high-quality sagebrush shrubland to indirect effects from decreased available forage such as insect populations or forbs. However, the proposed action changes the current and past grazing strategy by providing an every other year rest period in the Pueblo Mountain and Denio Basin pastures. Riparian vegetation is the primary ecological attribute affected by grazing and this pasture contains approximately 4 miles of important riparian habitat for several species of migratory birds. Several studies show that changing grazing strategies (e.g., from continuous use to rest and rotation, reduced hot-season/growing season grazing, and earlier turnout dates) can have a positive effect on riparian restoration and long-term recovery of important soil and vegetative attributes important to migratory birds (Booth et al. 2012, Dalldorf et al. 2013). Furthermore, Nelson et al. (2011) shows that seasonal exclusion of livestock from riparian areas is a successful method for avian recovery. Thus, by removing all grazing for five out of ten years and allowing the riparian vegetation to recover in these pastures, we expect to see substantial improvement in soil and vegetative attributes important to several species of migratory birds (Booth et al. 2012, Dalldorf et al. 2013). The addition of cattleguards in place of existing gates will also improve soil and vegetative attributes by further protecting them from stray animals that may enter the Pueblo Mountain pasture during the off-season due to problems with the gates.

Under the proposed action, the allotment would continue to operate under a rest-rotation system with grazing occurring two out of every three years for the winter pastures and every other year for two of the summer pastures. For one of the summer pastures and one of the winter pastures grazing would occur every year but at different times of the year.

The upland utilization since 2001 has been slight to moderate for all seven pastures and the stocking rate calculated for these pastures over the last 12 years indicate that stocking levels are most often well under the desired stocking rate and KMA utilization (Table 3.11). Table 3.11 indicates that the actual utilization of the Alberson Basin pasture has been slight (20%) to light (40%) for 4 out of 5 years where monitoring data was available. This gives a desired stocking rate of approximately 322 cows per month assuming continued light (40%) utilization. Likewise, utilization of the Continental pasture has also been light (40%). Given these utilization and stocking data and the estimated productivity of the ecological site descriptions in these pasture (see vegetation section), the proposed action should be able to meet the life cycle and habitat requirements of migratory birds for these pastures.

Denio Creek Exclosure Alternative

Implementation of this alternative would provide: (1) no rest of the Pueblo Mountain pasture, (2) grazing every year on the Continental pasture, (3) a three-year rotation with grazing occurring two out of every three years on the remaining pastures, and (4) a fencing exclosure for Denio Creek. The fencing of Denio Creek would likely provide an opportunity to allow riparian

soil and vegetation attributes in Denio Basin and Pueblo Mountain to recover enough to benefit migratory birds (Nelson et al. 2011, Booth et al. 2012, Dalldorf et al. 2013). However, the fence may create additional problems for certain sensitive species (see section on sensitive species). In addition, the increased pressure on the Continental pasture over 10 years could have potentially adverse effects on migratory birds (and other sensitive species) either through direct impacts such as trampling of eggs of ground nesters or loss, degradation, or fragmentation of high-quality sagebrush shrubland to indirect effects that result in decreased insect populations or forbs, which are used as forage for migratory birds.

Reduced Grazing Alternative

Under this alternative, a decision would be issued saying that no livestock grazing would be authorized for a period of ten years. As a result, the permittee would not be authorized to graze livestock on the Pueblo Mountain Allotment and range improvements would not be maintained. Due to the absence of livestock grazing under this alternative, there may be a short term increase in annual species followed by a decrease of these annual species. In the long term, the health, diversity, vigor, and production of the perennial vegetation would be expected to increase to late ecological status or climax seral stage. These conditions should act to optimize habitat for the life cycle requirements of migratory birds.

4.1.4 Threatened and Endangered Species

No Action

This alternative has been used for several years. Impacts to LCT and LCT habitat caused by livestock grazing during stream crossings and grazing within and adjacent to Denio Creek may include: a) trampling of redds, b) increased stream temperature due to loss of overhanging vegetation, c) increased sedimentation due to streambank and upland erosion, and d) increased channel width and undercut bank habitat loss due to hoof-induced bank shearing and trampling (Roberts and White 1992, Gregory and Gamett 2009, USDOI 2006, Platts 1990). As discussed in section 3.6, the habitat survey of Denio Creek in 2012 showed a decrease in undercut stream bank habitat and an increase in actively eroding stream banks for the Pueblo Mountain and Denio Basin pastures, from the three week grazing use of each pasture. Monitoring of Denio Creek riparian habitat in the Pueblo Mountain Pasture showed that meeting the objectives of streambank alteration of less than 10% was difficult. Therefore, the potential impacts for LCT and LCT habitat would most likely include a decrease in undercut stream bank habitat and an increase in actively eroding stream banks.

Proposed Action

The proposed action includes the following measures (proposed objectives) that would lessen the impacts to LCT and LCT habitat: the utilization of key streambank riparian plant species (*Juncus spp.* and *Carex spp.*) would sustain a minimum 4-inch stubble height when cattle are removed from the Pueblo Mountain and Denio Basin pastures, utilization of riparian woody species would not exceed 30%, and linear streambank alteration would not exceed 10%. The permittee would be responsible for conducting monitoring and ensuring that cattle are removed from the pastures prior to exceeding these objectives, to lessen the impacts on LCT and LCT habitat.

With the proposed action, livestock would have access to Denio Creek during the period of LCT spawning and egg incubation through embryo development. LCT spawning generally occurs from April through July, depending on stream flow, elevation, and water temperature (Calhoun 1942; La Rivers 1962; McAfee 1966; Lea 1968; Moyle 2002). Although livestock access is limited by terrain and dense woody (willow) riparian vegetation, the physical disturbance (trampling) of redds could occur in the occupied habitat contained in the Cowden and Pueblo Mountain pastures (Roberts and White 1992, Gregory and Gamett 2009). The Cowden Pasture would be allowed to be grazed once every three years from April 1 to May 31. The Pueblo Mountain Pasture would be grazed from June 1 to June 21 every other year. However, the areas accessible to livestock comprise an estimated 10 percent of the occupied habitat. The spawning activity more likely occurs within the 90 percent of occupied habitat containing protective cover for the species.

Other impacts to LCT and LCT habitat caused by livestock grazing within occupied and upstream of occupied habitat during stream crossings and grazing within and adjacent to Denio Creek may include: a) increased stream temperature due to loss of overhanging vegetation, b) increased sedimentation due to streambank and upland erosion, and c) increased channel width and undercut bank habitat loss due to hoof-induced bank shearing and trampling (USDOI 2006, Platts 1990). With the proposed action, impacts to LCT would not be the same as the current conditions, as the three-week livestock grazing use in the Pueblo Mountain and Denio Basin pastures would be reduced from two years grazed and one year rest, to being grazed every other year. With that said, the most recent habitat survey (2012) of Denio Creek showed a decrease in undercut stream bank habitat and an increase in actively eroding stream banks for the Pueblo Mountain and Denio Basin pastures, from the current three week grazing use. With the proposed action of three week grazing every other year in both of these pastures, an increase in undercut stream banks and decrease in actively eroding stream banks would be expected over time with the decreased cattle pressure on the LCT habitat. Salmonids prefer the habitat provided by undercuts, as streamflow velocities are lower and it creates ideal holding areas and cover from predators. Stable stream banks are more likely to develop stream bank undercuts. Healthy riparian vegetation can stabilize stream banks with the reinforcing action of interconnecting root systems. Resting these pastures every other year provides opportunity for the riparian vegetation and stream banks to recover (Platts 1991).

The addition of cattleguards in place of existing gates within the Pueblo Mountain pasture would also provide improved protection to stream banks by further protecting them from stray animals that may enter the Pueblo Mountain pasture during the off-season due to problems with the gates.

Denio Creek Enclosure Alternative

This alternative is similar to the proposed action for LCT and LCT habitat within the Cowden and Denio Basin pastures, so the potential impacts would be the same for those pastures. However, the difference between the proposed action and this alternative would apply to the Pueblo Mountain Pasture with the construction of an enclosure fence with narrow water gaps of Denio Creek. The enclosure would provide, in time, complete restoration of the LCT riparian habitat within the Pueblo Mountain Pasture. The building of the enclosure would provide short-term sedimentation as the narrow water gaps are hardened with coarse material, and long-term improved LCT habitat to the area that would be closed to livestock use. The long-term beneficial

impacts timeframe could include: improved riparian and aquatic habitat in 4 to 7 years, woody plant recovery in 5 to 8 years, and a doubling of fish biomass in 3 to 5 years (USDOI 2006).

Reduced Grazing Alternative (Maximum Reduction) Alternative

With this alternative, only beneficial impacts to LCT and LCT habitat could be expected. Stuber (1985) found that trout populations often increased in response to reduced or no grazing. Platts and Rinne (1985) found that 16 out of 16 studies demonstrated benefits to the riparian zone from eliminating grazing, and that trout populations had also increased in 12 out of 16 of the study sites.

4.1.5 Water Quality (Surface)

No Action

Under the No Action alternative, there would be no expected change to current surface water quality conditions. Current impacts to water quality are identical to those described under the proposed action in type and areal extent.

Proposed Action

Under the proposed action, the permitted AUMs would not change and the impact to average water quality across the allotment from livestock urine and feces would not change. Time in some pastures, however would change slightly. Proposed cattle use in both the Denio Basin and Pueblo Mountain pastures would be for three weeks every other year, leading to approximately the same levels of chemical or bacteriological pollutant input from cattle as does currently occur. In general, once grazing has ended for the year, these impacts would not persist in perennial lotic systems because of flowing water's ability to "flush" nutrients and pathogens out of the system.

Terms and conditions under the proposed action are designed to reduce the following impacts to sediment loading. Impacts to water quality from the introduction of sediments to Denio Creek from stream beds and stream channels would be expected to decrease under the proposed action due to the inclusion of extra rest years along with the three-week period of grazing for cattle in the Denio Basin and Pueblo Mountain pastures. Lentic systems may experience more persistent impacts to surface water quality because of an inability of the system to "flush" sediment, nutrients, or pathogens.

Denio Creek Exclosure Alternative

The overall impact to water quality under this alternative would be identical to that described as a result of the proposed action with the exception of sediment loading from the portions of Denio Creek within the Pueblo Mountain pasture. Within this pasture, nutrient and pathogen loading from urine and feces would be concentrated at water gap locations. Because this is a lotic system, the movement of water would be expected to distribute (and to some extent dilute) the impact throughout the reach, cause an impact similar to that which would be caused if cattle had access to the entire reach within this pasture. The water gaps would be expected to be "hardened" or armored against excessive erosions and would not be expected to contribute to sediment loading of the stream. Portions of the stream which would be excluded from cattle use would not experience sediment loading from stream bed or bank alteration and areas where erosion is

currently occurring would, over time, be expected to stabilize through channel morphology changes and/ or increased density and function of stabilizing riparian plant species.

Reduced Grazing Alternative (Maximum Reduction) Alternative

Under this alternative, current water quality conditions would improve. The short term increases of nutrients and pathogens from cattle would not occur. The short term increases in nutrient loading due to alteration of stream beds and banks by cattle would not occur. Erosion would be expected to decrease over time as stream channels would be expected to stabilize through channel morphology changes and/ or increased density and function of stabilizing riparian plant species. Additionally, by rejecting the permittee's application to renew their grazing permit would functionally eliminate the beneficial use for which stockwater rights have been filed. With no beneficial use, the water rights become invalid and are deemed to be forfeited by NDWR. This would allow previously certificated water to be filed on for other purposes.

4.1.6 Wetlands and Riparian Zones

No Action

The upper two reaches of Denio Creek display some characteristics that cause it to be considered at risk. Photo monitoring indicates that the upper reach of Denio Creek has seen improvements in the vegetative community over the course of the existing grazing permit. Photo monitoring also indicates minimal or no improvement of the vegetative community in the middle reach of Denio Creek. Both reaches continue to exhibit differing degrees of erosional concerns. If the current grazing system were to continue, the improving trend observed in the vegetative community of the upper reach of Denio Creek would likely continue, ultimately leading to an improvement of the erosional concerns and a functionality assessment rating of PFC. The middle reach of Denio Creek would likely remain in an at risk state with little likelihood of meeting the maximum 10% (linear) stream bank alteration objective.

Proposed Action

Terms and conditions under the proposed action are designed to reduce the following impacts to riparian functionality. Under the proposed action, utilization of and impacts to wetlands and riparian zones would be identical to current conditions with the exception of the Denio Basin and Pueblo Mountain Pastures. In these two pastures, use would occur for three weeks every other year. Within these two pastures, where PFC inventories have qualitatively indicated concerns regarding erosion and insufficient riparian vegetation, three weeks of cattle use during the hot season and additional rest periods would be expected to increase riparian functionality and decrease erosion due to decreased utilization of riparian plant species and decreased alteration of stream beds and banks by cattle.

The addition of cattleguards in place of existing gates within the Pueblo Mountain pasture would be expected to increase riparian functionality and decrease erosion due to decreased utilization of riparian plant species and decreased alteration of stream beds and banks by cattle that may stray into the Pueblo Mountain pasture during the off-season due to problems with the gates.

Denio Creek Exclosure Alternative

The construction of an exclosure fence with up to three water gaps along Denio Creek would allow for complete rehabilitation of the vegetative communities and the stream channel

morphology within the enclosure. Vegetative rehabilitation would likely occur quickly (in the first five years or so). Channel morphology rehabilitation would likely take much longer (on the order of tens of years). Additionally, the natural channel characteristics would be completely altered at the sites chosen for water gaps. The channel at these sites would likely be shallower and wider than would be expected under natural conditions and the channel substrate would be altered (increased in size) through the use of coarse material which is more resistant to erosion despite increased alteration from hoof action. In all portions of the stream, those where cattle are excluded as well as gravel/ cobble armored water gaps, stream bank alteration by cattle would be reduced to 0%.

An enclosure may also lead to increased pressure on remaining water sources and their associated wetlands or riparian zones. The BLM is unable to quantify the degree to which this would occur. This impact would be lessened or eliminated through the inclusion of water gaps in the design of the Denio Creek enclosure. By including locations along Denio Creek where livestock could still access water, the need for livestock to rely on other water sources would not be created and changes to cattle distribution would be expected to be negligible.

Reduced Grazing Alternative (Maximum Reduction) Alternative

Elimination of livestock grazing under the Reduced Grazing Alternative (Maximum Reduction) would prevent periodic disturbances and removal of vegetation by grazing activities. As a result, the wetland and riparian areas of the allotment should approach their natural potential. This may include a decrease in water temperature due to increased shading, a decrease in sediment loading due to increased bank stability, and a decrease in nutrient and pathogen loading periods. In general a trend toward the lands potential natural condition would result.

4.1.7 Social Values and Economics

No Action

Implementation of the No Action Alternative would allow livestock grazing under existing terms and conditions in accordance with the provisions of the existing permit. There would be no change in impacts to the ranching community, economy, culture, or tradition.

Proposed Action

Under the proposed action Alternative, grazing would continue on the allotment at the same authorized level as currently permitted by BLM (2,137 AUMs). Therefore, the economic and social impacts would be expected to remain the same as described in Section 3.12 Social and Economic Values. The proposed action would allow for continued improvement of rangeland resources which should, in the long term allow for a stabilized livestock operation. BLM would continue to manage the public lands in this allotment for multiple resources uses.

Reduced Grazing Alternative (Maximum Reduction)

If the grazing permit for this federal land was cancelled, the permittee would be forced to make changes in their current livestock operations, which would vary in degree and effect. Changes could include possible increase in inputs such as fencing or herding to assure that cattle remain on private land. This increase in inputs may make grazing on other private lands untenable for any potential livestock operator. In addition, the private landowner could prevent BLM from accessing public lands thereby reducing management flexibility.

The Reduced Grazing Alternative (Maximum Reduction) could have a negative impact to Moser Ranch, LLC. This alternative would result in a Decision that no livestock grazing would be authorized for a period of ten years. A Decision with rationale to the permittee and affected interests would follow this selection. As a result of this decision there would be a negative impact to the local economy as the area is a small community dependent upon ranching and agriculture.

4.1.8 Soils

No Action

Under the No Action Alternative vegetation resources would continue to be impacted at current levels. Under the No Action Alternative vegetation would continue to be utilized as it is currently.

Proposed Action

Under the proposed action, soils would be managed to maintain the health and resilience of native vegetation communities in the area, minimizing the potential for accelerated (human caused) wind and water erosion. In order to maintain soil processes a healthy, productive and diverse plant community is necessary. Better distribution of domestic livestock would improve range conditions increasing productivity, litter, soil fertility, infiltration and nutrient cycling. Better distribution across upland rangeland could incrementally increase impacts to biological crust communities however better rest/rotation cycles allows for adequate recovery time for these communities.

Biological Soil Crusts (BCSs) are least vulnerable to shearing and trampling from livestock when soils are moist and the most vulnerable when soils are dry. Surface rock fragments mitigate shearing and trampling by livestock throughout a large portion of the allotment.

The proposed action would maintain appropriate soil processes and functions. The standards for rangeland health, Standard 1 (Soils) is currently making notable progress. The proposed action would continue this trend.

Denio Creek Exclosure Alternative

Under this alternative domestic livestock impacts to riparian banks within the Pueblo Mountain pasture exclosure would be substantially reduced, decreasing soil compaction and erosion. Limited soil loading from developed 'water gaps' would still take place. Also re-distributed grazing pressure to other upland water sources would incrementally increase impacts to soils surrounding those sources.

Reduced Grazing Alternative (Maximum Reduction)

Under this alternative the potential for soil erosion would be reduced thereby improving soil processes. Reduction in grazing should eventually result in establishing more perennial native grasses thereby reducing non-native annual species. This may reduce the potential for wildfires and subsequent soil erosion potential. Soil biological crusts should increase with improvements in the vegetation conditions and lack of disturbances from livestock.

4.1.9 Special Status Species

No Action

Implementation of this alternative would maintain the current grazing schedule that has operated since 1999. Again, several studies show that changing grazing strategies (e.g., from continuous use to rest and rotation, reduced hot-season/growing season grazing, and earlier turnout dates) can have a positive effect on riparian restoration and long-term recovery of important soil and vegetative attributes important to a variety of sensitive species including ground and riparian nesting birds, amphibians, mammals, and insects. Alternatively, no change in grazing strategy may have, at best, a neutral effect on sensitive species. However, these sensitive species populations are already in decline and their habitat continues to be lost, degraded, and fragmented. Therefore, continuing the current grazing strategy is more likely to have a negative, long-term effect that could worsen the population decline and habitat loss of these sensitive species.

Bighorn sheep prefer rugged, rocky terrain and usually are found within a quarter mile of steep, rocky escape cover. Cattle are usually found grazing on more gentle terrain and avoid rocky areas if possible. Bighorn sheep and cattle are not closely related, so the potential for disease transmission between these animals is considered negligible. Interaction would most likely occur at water sources in or near steep rocky areas. Therefore, it is anticipated that impacts to Bighorn Sheep from the No Action Alternative would be minimal.

Proposed Action

Special Status Birds and Raptors, Sensitive Ground Nesting and Upland Birds – Direct impacts to sensitive ground nesting and upland birds would vary depending on species behavioral, habitat, and life history characteristics. Greater sage-grouse, sage thrasher, and Brewer's sparrow typically nest in sage-brush associated communities. While sage-grouse nests typically consist of a shallow depression on the ground, the sage thrasher and Brewer's sparrow nest on or within 1 meter from the ground (Harrison 1978, Reynolds 1981, Rich 1980). Livestock may travel through these habitat types on their way to water or alternate feeding grounds, so it may be possible for the eggs of ground nesting birds to be trampled or dislodged from the nest. However, such birds have evolved with such risks and have successfully co-existed with other ungulate species (e.g., deer, bighorn sheep, and antelope). Therefore, the greater impact to these species is likely to come from over grazing which can result in the loss, degradation, or fragmentation of high-quality sagebrush shrubland and may ultimately reduce prey habitat and degrade the vegetation structure for nesting and roosting.

Greater sage-grouse - Some of the most substantial threats to sage-grouse in Nevada come from impacts from fire, invasive species (e.g., cheatgrass), fragmentation due to roads and utility lines, increased predator perch sites (e.g., utility lines and fences), and over grazing. These are all actions connected to livestock grazing in rural areas.

The proposed action changes the current grazing strategy by providing a rest period every other year in the Pueblo Mountain and Denio Basin pastures. Riparian and wetland vegetation is the primary ecological attributes affected by grazing in this pasture. Sage-grouse leking, nesting, and brood rearing take place in close proximity to areas that are dominated by sagebrush with greater perennial forbs and higher richness of plant species. Important factors include sagebrush

overstory, herbaceous understory, and the presence of plentiful insects that provide a high-protein diet for broods (Connelly 1999b). These areas include mountain meadows, springs, and riparian areas where forbs and insect populations are typically greatest (Erman 2002, Myers and Resh 2002).

The Pueblo Mountain pasture contains approximately 4 miles of riparian habitat important for sage-grouse. The proposed action changes the current and past grazing strategy by providing a rest period of every other year in the Pueblo Mountain and Denio Basin pastures. Several studies show that changing grazing strategies (e.g., from continuous use to rest and rotation, reduced hot-season/growing season grazing, and earlier turnout dates) can have a positive effect on riparian restoration and long-term recovery of important soil and vegetative attributes important to several bird species including sage-grouse (Booth et al. 2012, Dalldorf et al. 2013). Furthermore, Nelson et al. (2011) shows that seasonal exclusion of livestock from riparian areas is a successful method for avian recovery. Thus, by removing all grazing every other year and allowing the riparian vegetation to recover in this pasture, we expect to see substantial improvement in soil and vegetative attributes important to sage-grouse.

Brewer's sparrow, sage thrasher, burrowing owls, and northern shrike – Populations of these four species may be declining due to loss, degradation, and fragmentation of high-quality sagebrush and montane sagebrush shrubland. This may be due to a variety of factors including fire, invasive plants, expansion of pinyon-juniper woodland into sagebrush, over grazing, and excessive off-highway vehicle use. These are all actions connected to livestock grazing in rural areas.

Long-term heavy grazing may reduce prey habitat and degrade the vegetation structure of nesting and roosting habitat for these species. However, light to moderate grazing may actually provide open foraging habitat that may be beneficial to certain species (e.g., northern shrikes: Paige and Ritter 1999). The proposed action would allow the upland and riparian vegetation in two pastures to rest and recover on an every other year basis, thereby providing more available forbs and insects for nesting birds. This would involve an increase in grazing pressure in two pastures. However, given the utilization and stocking data (Table 4-1), the temporary nature of the increased pressure, and the estimated productivity of the ecological site descriptions in these pasture (see vegetation section), the proposed action should be able to meet the life cycle and habitat requirements of Brewer's Sparrow, Sage Thrasher, Burrowing Owls, and Northern Shrike.

Lewis's Woodpecker, Western Yellow-billed Cuckoo, and Northern Goshawks - Conservation challenges for these species include loss of riparian habitat from logging, natural stand collapse, and degradation of riparian habitats by fire suppression, water diversions, dams and river flow management, stream channelization and stabilization, groundwater pumping, woodcutting, and invasion of non-native vegetation, drought, insect and disease outbreaks, and unsustainable livestock grazing (USFWS 2003, Hunter et al. 1988, Laymon and Halterman 1989, Ehrlich et al. 1992, Graham et al. 1999, NDOW 2013).

The proposed action changes the current and past grazing strategy by providing a rest period of every other year in the Pueblo Mountain and Denio Basin pastures. Riparian vegetation is the

primary ecological attribute affected by grazing and this pasture contains approximately 4 miles of important riparian habitat for these four sensitive bird species. Several studies show that changing grazing strategies (e.g., from continuous use to rest and rotation, reduced hot-season/growing season grazing, and earlier turnout dates) can have a positive effect on riparian restoration and long-term recovery of important soil and vegetative attributes important to migratory birds (Booth et al. 2012, Dalldorf et al. 2013). Furthermore, Nelson et al. (2011) shows that seasonal exclusion of livestock from riparian areas is a successful method for avian recovery. Thus, by removing all grazing every other year and allowing the riparian vegetation to recover in this pasture, we expect to see measurable improvement in soil and vegetative attributes important to these four sensitive bird species (Booth et al. 2012, Dalldorf et al. 2013).

Columbia Spotted Frog - Potential anthropogenic impacts to spotted frog populations and their habitats include capping of springs, extraction of water for stock and mineral exploration, alteration and degradation of wetland and pond features, non-native vertebrate introductions, and herbicide applications to wetlands (NDOW 2013). Some of these impacts are associated with livestock grazing which can also impact spotted frog through fecal contamination of standing water, reduced wetland plant cover, and direct mortality to frogs).

Columbia spotted frogs (*Rana luteiventris*) are closely associated with clear, slow-moving or ponded surface waters, with little shade, and relatively constant water temperatures. Breeding and egg-laying occurs in waters with floating vegetation and larger ponds such as oxbows, lakes, stock ponds, and beaver-created ponds. Most of these water features are not typically found on the allotment. However, the proposed action may eventually provide more suitable habitat for the spotted frog by allowing the restoration of wetland and riparian soil, water, and vegetative attributes. These attributes help improve wetland and riparian areas by decreasing sediment and providing structural components like shade, plant material, pools, and riffles some of which can be beneficial to spotted frogs (e.g., decomposed plant material provides a food source and refuge for developing tadpoles). Artificial water improvement projects associated with grazing can also benefit frogs by providing water where it would not naturally occur.

Sensitive Insects

Bleached Sandhill Skipper (BSS) – This particular species of butterfly has been found at the south end of the Pueblo Slough in the Baltazor Hot Springs drainage system which is located in the Continental pasture. According to the USFWS (Federal Register volume 77, No. 171, September 4, 2012), the BSS is associated with salt flat areas and is known to fly during late August to mid-September. Salt grass (*Distichlis spicata*) is thought to be the larval host plant and the BSS nectars on white and yellow composites (Federal Register volume 77, No. 171, September 4, 2012).

Through the proposed action the Continental pasture would be used every year either from mid-July to mid-August or during the month of October. These dates are before or after the known flight time of this species (August 16 to September 30). The permittee would be prohibited from grazing the Continental pasture from August 16 to September 30. The USFWS (Federal Register volume 77, No. 171, September 4, 2012) suggests that not enough information is available to determine whether or not grazing impacts the life cycle and habitat requirements of the BSS.

However, the proposed action follows the BLM's policy for sensitive species by promoting the conservation and minimizing the likelihood and need for listing under the Endangered Species Act of 1971.

Townsend's big-eared bat, Big brown bat, long-legged myotis, Western small-footed bat hoary bat – These bats commonly roost in caves, mines, outcrops, buildings, trees, and under bridges. Livestock grazing is not likely to impact roosting or maternity sites. However, bats thrive where plant communities are healthy enough to support a large population of prey (Bradley et al. 2006), so healthy riparian communities with high water tables and tall vegetation provide favorable foraging habitat for bats by supporting large flying insect populations.

The proposed action changes the current and past grazing strategy by providing a rest period of every other year in the Pueblo Mountain and Denio Basin pastures. Riparian vegetation is the primary ecological attribute affected by grazing and this pasture contains approximately 4 miles of important foraging habitat for sensitive bat species. Changing the grazing strategy should have a positive effect on riparian restoration and long-term recovery of important soil and vegetative attributes which, in turn, should help increase flying insect populations (Erman 2002, Myers and Resh 2002) that are important to these sensitive bat species.

The proposed action would allow the upland and riparian vegetation in two pastures to rest and recover on an every other year basis, thereby providing more available forbs and insects for nesting birds. The Proposed Action should be able to meet the life cycle and habitat requirements of these sensitive bats.

Pygmy rabbit – As with many wildlife species, livestock grazing at unsustainable levels can result in the degradation of important as pygmy rabbit habitat. However, if grazing occurs at sustainable levels that leave vegetation intact and soils not overly compacted, it can be compatible or even beneficial to wildlife species such as pygmy rabbits. The proposed action changes the current and past grazing strategy by providing a rest period of every other year in the Pueblo Mountain and Denio Basin pastures. This change in the grazing strategy should have a positive effect on riparian restoration and long-term recovery of important soil and vegetative attributes which, in turn, should help enhance or restore pygmy rabbit habitat.

Long-term heavy grazing may reduce prey habitat and degrade the vegetation structure of the habitat for these species. However, recent studies show that grazing can be compatible with pygmy rabbits if grazing occurs at levels that leave sagebrush plants intact and soils not overly compacted (NDOW 2013). The proposed action would allow the upland and riparian vegetation in two pastures to rest and recover every other year, thereby providing more available vegetation for pygmy rabbits. There would be an increase in grazing pressure within two of the pastures (Alberson Basin and Continental). However, given the utilization and stocking data (Table 4-1), and the estimated productivity of the ecological site descriptions in these pasture (see vegetation section), the proposed action should be able to meet the life cycle and habitat requirements of pygmy rabbits.

Bighorn Sheep - According to the NDOW database, there is year round habitat within the Denio Basin, Pueblo Mountain, Alberson Basin, Chokecherry, Cowden, and Black Mountain pastures.

Although bighorn and cattle are primarily grazers, bighorn habitat preference only slightly overlaps with cattle on mountain meadow habitats. Bighorn prefer rugged, rocky terrain and usually are found within a quarter mile of steep, rocky escape cover. Cattle are usually found grazing on more gentle terrain and avoid rocky areas if possible. Bighorn sheep and cattle are not closely related, so the potential for disease transmission between these animals is considered negligible. Interaction would most likely occur at water sources in or near steep rocky areas. Considering that the Pueblo Mountain pasture would be rested every other year, it is anticipated that impacts to Bighorn Sheep from the proposed action would be minimal and even beneficial.

Pueblo Valley Peppergrass – The Pueblo Valley Peppergrass is found primarily in sand dunes and sand areas and is not typically grazed by livestock. Therefore, if this plant species exists on the allotment, the proposed action should have minimal impact to this species' habitat and lifecycle requirements.

Dainty moonwort – The dainty moonwort is aquatic or wetland-dependent. The proposed action is designed to help improve the riparian habitat on the allotment. Therefore, if this plant species exists on the allotment, the proposed action would benefit this species by allowing recovery of the necessary soil and vegetation components associated with their known habitat and lifecycle requirements.

Denio Creek Exclosure Alternative

Implementation of this alternative would provide: (1) no rest of the Pueblo Mountain pasture, (2) grazing every year on the Continental pasture, (3) a three-year rotation with grazing occurring two out of every three years on the remaining pastures, and (4) a fencing enclosure for Denio Creek. The fencing of Denio Creek would likely provide an opportunity to allow riparian soil and vegetation attributes in Denio Basin and Pueblo Mountain to recover enough to benefit sensitive migratory birds, greater sage-grouse, riparian nesting birds, the Columbia spotted frog, certain bats species, pygmy rabbits, and sensitive plant species (Nelson et al. 2011, Booth et al. 2012, Dalldorf et al. 2013). However, the fence itself may create additional problems for certain sensitive species. For example, fences can have direct impacts to greater sage-grouse through collisions and indirect effects by providing perch sites for predators such as Corvids and raptors. Predation by Corvids and raptors could also have an impact on other nesting birds, amphibians, and pygmy rabbits.

To reduce negative impacts, construction of the exclosure fence would be in accordance with all agency wildlife specifications including bighorn sheep, pronghorn and sage-grouse. To reduce the chances of collisions the exclosure fence would have reflectors hung on the wires for increased visibility. The construction would also include perch deterrents to decrease the ability of predators to perch on the fenceline.

Bighorn Sheep - Bighorn prefer rugged, rocky terrain and usually are found within a quarter mile of steep, rocky escape cover. Cattle are usually found grazing on more gentle terrain and avoid rocky areas if possible. Bighorn sheep and cattle are not closely related, so the potential for disease transmission between these animals is considered negligible. Interaction would most likely occur at water sources in or near steep rocky areas. Considering that the Denio Creek area would be fenced under this alternative, it is anticipated that impacts to Bighorn Sheep from this

alternative would be in the form of collisions and entanglement. Fence specifications would include ways to minimize this threat.

Reduced Grazing Alternative (Maximum Reduction)

Under this alternative no permits would be issued and the permit would be cancelled. As a result, the permittee would not be authorized to graze livestock on the Pueblo Mountain Allotment and range improvements would not be maintained. This alternative would have the most beneficial effect for sensitive species.

4.1.10 Vegetation

No Action

Under the No Action Alternative vegetation would continue to be utilized as it is currently.

Proposed Action

Livestock grazing can impact the amount, composition, condition, and production of vegetative communities. Often, the vegetation is disturbed around salting areas, bed grounds, troughs, and stock reservoirs, and riparian areas, resulting in a loss of plant cover and diversity, which often can result in localized areas dominated by invasive plants. The proposed action would reduce these potential impacts through seasonal rest/rotation scenarios linked to utilization levels of rangeland habitats and by promoting better distribution of domestic livestock across the allotment pastures.

Denio Creek Enclosure Alternative

Under this alternative domestic livestock impacts to riparian vegetation within the Pueblo Mountain pasture enclosure would be substantially reduced, increasing perennial vegetation cover and bank resilience to high flow events. Also re-distributed grazing pressure to other upland water sources would incrementally increase.

Reduced Grazing (Maximum Reduction) Alternative

Under the Reduced Grazing Alternative (Maximum Reduction), the native perennial plant diversity, cover, vigor, and production should eventually increase. In the short term, annual species could increase but then decrease in the long term as the health, diversity, vigor, and production of the perennial vegetation increases to late ecological status or climax seral stage.

4.1.11 Wilderness Study Area

No Action

Livestock grazing would continue to impact the naturalness quality of the Pueblo Mountain WSA through trampling of vegetation, soil compaction, spread of noxious weeds, etc. The impacts to wetlands/riparian areas and fisheries are noted to be higher under this alternative; therefore the impacts to the area's naturalness are likewise higher. Livestock grazing is considered a grandfathered use. The benchmark for the manner and degree of an existing use is the physical and visual impact that use was having on the area on October 21, 1976 because it is that impact that would have affected the wilderness review. Impacts from this alternative would affect a little over 7% of the entire WSA and not change from current trends.

Impacts to opportunities for solitude or primitive recreation would be the same as those described under the proposed action alternative.

Proposed Action

Livestock grazing is a grandfathered use and may continue even if it impairs wilderness suitability (BLM 2012). Under this alternative livestock grazing would continue in the WSA under a different management system. Impacts would affect a little over 7% of the WSA. Continued livestock grazing could continue to impact the naturalness quality of the Pueblo Mountain WSA (e.g. trampling of vegetation, soil compaction, spread of noxious weeds). However, the rotation system proposed has the potential to offset these impacts by potentially increasing vigor and cover of native plant species, improving soil conditions, reducing spread of invasive, non-native species.

During the times the portions of the WSA are grazed by livestock, the opportunities for solitude or primitive recreation would be decreased by the sights and sounds associated with the livestock and grazing operations needed to manage the livestock (i.e. herding).

Replacing existing gates with cattleguards would also temporarily impact opportunities for solitude during construction period. The cattleguards would be placed on an existing way and boundary road and would not change the level of use these roads receive. Replacing the gates with cattleguards would not change the level of disturbance to the naturalness quality because the fence is an existing feature. Overall, the proposed action would not impair the suitability of the area for wilderness designation.

Denio Creek Exclosure Alternative

The installation of the 1,489 feet of exclosure fence along the portion of Denio Creek would be located in the portion of the WSA that is being recommended for release. It is BLM policy to not allow the establishment of new discretionary uses in WSAs that would impair the suitability of such areas for wilderness designation. An exception to this may be allowed when the action would benefit the WSA. The proposed fence would be a permanent feature and would involve some surface disturbance. However, it would protect the riparian area, allowing for recovery and subsequent improvement of the naturalness of the area. The feature's small size and the area's topography and vegetative screening would minimize impacts by reducing visibility of the feature where it would be substantially unnoticeable. Impacts to opportunities for solitude or primitive recreation would be the same as those described under the proposed action alternative.

Reduced Grazing (Maximum Reduction) Alternative

Spread of noxious weeds and impacts to upland and riparian habitats and soils caused by livestock would be reduced. Water quality conditions would persist or improve and fisheries would have only beneficial impacts. Native perennial plant diversity, cover, vigor, and production should eventually increase. These anticipated impacts demonstrate the naturalness of the WSA would improve; however, this would only be realized in about 7% of the WSA.

Impacts to opportunities for solitude or primitive recreation would not occur as the area would not experience activities associated with livestock grazing and management of livestock.

4.1.12 Wildlife

No Action

Impacts to wildlife would be similar to that discussed in section 4.1.9.1 Special Status Species. However, conditions in the riparian areas of Denio Basin and Pueblo Mountain pasture would likely be maintained or improve at a slower rate compared to the improvement expected under the proposed action alternative.

Proposed Action

Refer to livestock grazing impacts to wildlife habitat in section 4.1.10 Vegetation. The discussion of upland and riparian habitat condition and trend in section 4.1.9.1 Special Status Species also applies to general wildlife species. It is expected that general wildlife species such as mule deer and pronghorn lifecycle/habitat requirements would also be met through the implementation of the proposed action. Burrowing wildlife species may sustain injury or damage to burrows by livestock but impacts are not expected to be to a level that would affect their populations as a whole. The use and maintenance of existing fences and water projects would continue to have impacts to birds and other wildlife. The use of fencing limits access and can help reduce impacts to habitat from livestock and human use. They can also allow implementation of livestock grazing systems which have an impact to wildlife habitat by providing periodic rest from grazing. Impacts could result from injuries or death of birds or other wildlife from strikes and entanglement or from alteration of movement.

Improving the riparian areas should be beneficial to most wildlife species. Existing water development sources can increase populations by providing water where it would not naturally occur. This may be beneficial to some species and detrimental to others. For instance, insect numbers may increase and provide a greater abundance of food for birds and bats near artificial waters, but may also increase the incidence of disease (e.g. West Nile virus) transmission to some species of wildlife.

Denio Creek Exclosure Alternative

Impacts to wildlife would be similar to that discussed in section 4.15.1 Wildlife. Conditions in the riparian areas of Denio Basin and Pueblo Mountain pasture would likely improve as well or better than the improvement expected under the proposed action alternative. However, because many wildlife species in desert communities are attracted to riparian areas, the additional fence along Denio Creek could result in increased impacts in the form of injuries or death of birds or other wildlife from strikes and entanglement or from alteration of movement.

To reduce these negative effects, construction of the exclosure fence would be in accordance with all agency wildlife specifications including bighorn sheep, pronghorn and sage-grouse.

Reduced Grazing (Maximum Reduction) Alternative

Under this alternative no permits would be issued and the permit would be cancelled. As a result, the permittee would not be authorized to graze livestock on the Pueblo Mountain Allotment and range improvements would not be maintained. This alternative would have the most beneficial effect for wildlife.

4.2 Cumulative Impacts

The Council on Environmental Quality (CEQ) regulations that implement NEPA defines a cumulative impact as: “The impact on the environment which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions.” Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7).

Assumptions for Cumulative Analysis

The Pueblo Mountain Allotment Cumulative Assessment Area (CAA) is 36,606 acres, of which 66% is in Nevada (Humboldt County) and 34% is in Oregon (Harney County). There are 33,648 acres of public lands, 100 acres of state land, and 2,897 acres of private land. The cumulative assessment area for all affected resources is the Pueblo Mountain Allotment with the exception of social and economic values which used the counties involved. Rationale for use of the allotment as the cumulative assessment area can be found under each resource to be analyzed.

Past and Present Actions

On the basis of aerial photographic data, agency records and current agency GIS records and analysis, the following past and present actions, which have impacted the assessment area to varying degrees, have been identified: Grazing and Range Improvements, Fire, Roads and infrastructure, Lands, Mining, Agriculture and Residential and Recreation Activities:

Grazing and Range Improvements – Grazing has been occurring in this area to varying degrees since the mid-1860s. Since the establishment of the BLM, range improvement projects such as troughs, pipelines and fences have been established in and around the allotment (map – 5).

Fire – There have been two fires that have occurred within the Pueblo Mountain Allotment. In 1997 285 acres burned within the northwest corner of the Alberson Basin pasture. In 1999 a fire burned 582 acres on the east side of the Cowden pasture.

Roads – There are approximately 11 miles of paved NDOT roads within the Pueblo Mountain Allotment. Five miles of Highway 292 run north/south in the allotment and six miles of Highway 140 run east/west. In addition, there are approximately 20 miles of two-track roads within the allotment.

Mining – In general these activities have occurred in the foothills peripheral to the Pueblo Mountain Allotment and have not been intensive. The only historical mine within the allotment is the Cowden Mine, which is within the Cowden pasture. No production figures are available implying the operation was small and short-lived.

Agriculture and Residential – Small amounts of agriculture occur on private parts of the allotment. This agriculture is mainly alfalfa farming. Residential development is sparse throughout the area. The town of Denio and hamlet of Denio Junction (combined population of 100) constitute the areas of highest population.

Recreation Activities – Dispersed recreation occurs within the assessment area and includes, wildlife viewing, hunting, off-highway vehicle use and camping.

Reasonably Foreseeable Future Actions

Since the effects of the proposed action are expected to last ten years, this time frame is considered to be most appropriate for considering the incremental effect of reasonably foreseeable future actions. Many of the past and present actions discussed above are expected to persist through this time frame, though the relative intensity of these actions could vary depending on a variety of economic factors.

Future activities from livestock grazing, wildfires, recreation and geothermal exploration would continue to slightly impact the soils and supported vegetation communities within the impact assessment area. Impacts from recreation and road construction or maintenance would slightly increase from the past and present conditions.

Livestock Grazing – Under the proposed action or the no action alternative, cattle use would continue. The listing of the greater sage-grouse as a threatened species could foreseeably affect grazing management.

Wildfire - While the occurrence of wildfire is unpredictable, it is likely based on historical patterns, that wildfire would again burn parts of the assessment area. BLM fire management policy states that wildfire would be aggressively and safely suppressed. This makes it likely that suppression techniques such as the construction of dozer lines, the cross-country travel of engines, the implementation of retardant drops, and the establishment of base camps for fire fighters are reasonably foreseeable.

Depending on the severity of the fire, and the nature of topography and soils, it is also reasonably foreseeable that some combination of rehabilitation and stabilization treatments such as dozer line stabilization, road repair, the construction of erosion or sediment control structures, the repair of damaged range improvements and facilities, drill and/or aerial seeding, range closures, green-stripping and noxious weed control would be implemented. Funding and improvement of restoration efforts should reduce the indirect impacts of wildfire such as erosion, increase in exotic species and temporal loss of forage and structure.

Recreation - Recreational use is expected to increase as a result of population growth in the areas that surround the assessment area. Some activities such as hunting and off-road vehicle use would likely continue and/or increase over time.

Geothermal exploration - There is currently no active geothermal drilling at this time. However, some amount of activity is expected to occur within the area of the Beltazor Hot springs in the near future. This activity could have an effect on wildlife in the immediate vicinity.

Cumulative Impacts to Affected Resources

Impacts associated with past, present, and reasonably foreseeable future actions are generally created by ground or vegetation-disturbing activities that effect natural and cultural resources in various ways. Of particular concern is the *accumulation* of these impacts over time. This section

of the EA considers the nature of the cumulative effect and analyzes the degree to which the proposed action and alternatives contribute to the collective impact. Inter-related resources with similar impacts have been grouped together for the cumulative impact analysis.

4.2.1 Cultural Resources

Relevant CESA:

The relevant CESA for Cultural Resources is the allotment. Due to the containment of impacts to the allotment by fencing, lack of travel routes through the allotment, and the fact that the majority of Denio Creek watershed and Continental Lake hydrology is captured within the allotment boundary, the Pueblo Grazing Allotment proved the best selection for the CESA for this analysis.

Impacts from Past and Present Actions:

Since many Great Basin prehistoric sites are surface or near surface sites, any ground disturbing activities destroy site integrity, spatial patterning and site function. Datable organic features are either destroyed or contaminated. Previous grazing, range improvements, minerals developments, road construction and maintenance, agricultural development, fire and dispersed recreation have caused these types of impacts to cultural resources, particularly prior to the passage of National Historic Preservation Act (NHPA), Federal Land Policy & Management Act of 1976 (FLPMA), the National Environmental Policy Act (NEPA) and the Archaeological Resources Protection Act of 1979 (ARPA). Cultural resource sites may also have been impacted by looting. Passage of NHPA, FLPMA, NEPA and ARPA has led to increased protection of cultural resource and reduced impacts to these resources.

Impacts from RFFAs:

Impacts to cultural resources could increase slightly if recreational use increases. Looting of sites may also increase if recreation use and access increases. Impacts from range improvements and other permitted developments would be avoided or mitigated.

Cumulative Impacts:

No Action

The No Action alternative would not incrementally increase impacts to cultural resources

Proposed Action

The proposed action would not incrementally affect cultural resources.

Denio Creek Exclosure Alternative

If there are cultural resource sites located within the proposed Denio Creek Exclosure, this alternative could incrementally reduce impacts to these cultural resources. However, re-distribution of grazing pressure to other upland water sources could incrementally increase impacts to cultural resources located in these areas due to increased trampling and erosion.

Reduced Grazing (Maximum Reduction) Alternative

The Reduced Grazing Alternative would incrementally decrease impacts to cultural resources due to reductions in trampling damage and erosion.

4.2.2 Invasive, Non-Native Species

Relevant CESA:

Relevant CESA for this analysis is the grazing allotment boundary. For this permit livestock are confined to a single allotment. Thus the potential for weed transportation from livestock onto this allotment is very low.

Impacts from Past and Present Actions:

The primary use of the assessment area has been livestock grazing. The only type of livestock grazed on the allotment has been cattle. Range improvements exist within the allotment including allotment and pasture boundary fences, pipelines, and developed springs (map 5: allotment Range Improvements). Past and present agriculture has occurred on private lands east of the Pueblo Mountain Allotment. The fields are mainly grass and alfalfa and are irrigated from water from Denio Creek. Very limited minerals exploration has occurred within the Pueblo Mtn. Allotment with associated native-surface road building. Some recreation, in the form of hiking, camping, hunting, rock hounding, etc. occurs within the allotment. All of these past and present uses create the potential for the transport of and establishment of populations of noxious weeds and non-native invasive species. Wildfire impacts have been minimal (approximately 285 acres total) within the Pueblo Mtn. Allotment within the last 40 years. Extensive inventory of noxious weeds and non-native invasive species has not been documented within the Pueblo Mtn. Allotment.

Impacts from RFFAs:

Recreational use would be expected to be maintained at current levels, or potentially to increase over time, which would maintain and/or increase the current potential risk of propagule transport and establishment of noxious weed or non-native invasive species populations over time. While wildfires have not resulted in large impacts to the allotment to-date, it can be reasonably assumed that the Pueblo Mtn. Allotment may be impacted on a large scale by wildfire in the future. Noxious weed inventory and control projects would likely be implemented by the BLM and/or the grazing permittee.

Cumulative Impacts:

No Action

The No Action Alternative would provide the greatest potential for the long term introduction and establishment of noxious weeds and other non-native invasive species compared with all other analyzed alternatives, since the current pattern and level of livestock use would be maintained and the permittee would not be held responsible for inventory and control of noxious weeds at livestock water developments, which have a high potential for the introduction and establishment of noxious weeds and other non-native invasive species. Other reasonably foreseeable future actions would continue to

provide the potential for the introduction and establishment of noxious weeds and other non-native invasive species.

Proposed Action

The proposed action would reduce the long term potential for the introduction and establishment of noxious weeds and other non-native invasive species compared with the No Action alternative considering past, present, and reasonably foreseeable future actions, since the grazing permittee would be required to conduct inventory and control noxious weeds at livestock water developments, which have a high potential for the introduction and establishment of noxious weeds. The proposed action would result in more potential for the introduction and establishment of noxious weeds and other non-native invasive species compared with the Denio Creek Exclosure and the reduced grazing alternative, since livestock disturbances would be further reduced under both of these alternatives. Other reasonably foreseeable future actions would continue to provide the potential for the introduction and establishment of noxious weeds and other non-native invasive species.

Denio Creek Exclosure Alternative

The cumulative impact of the Denio Creek exclosure alternative would be identical in all regards to the cumulative impact of the proposed action, except that the fenced reaches of Denio Creek would have less potential for the introduction and establishment of noxious weeds, and would provide less risk as a vector of transport of noxious weeds to other upland areas.

Reduced Grazing (Maximum Reduction) Alternative

Under the reduced grazing alternative, the potential for introduction and establishment of noxious weeds and non-native invasive species would be eliminated as a result of current and future livestock utilization. Disturbances and potential spread of noxious weeds and non-native invasive species resulting from past livestock use would remain, and other reasonably foreseeable future actions would continue to maintain some potential for the continued spread of noxious weeds and non-native invasive species. As a result of the elimination of livestock utilization of vegetation within the allotment, the overall ability of the ecosystem to resist the establishment of noxious weeds and non-native invasive species would be improved across the entirety of the allotment.

4.2.3 Migratory Birds, Threatened and Endangered, Special Status Species, and Wildlife

Relevant CESA:

The relevant CESA for migratory birds, special status species and wildlife is the Pueblo Mountain Allotment boundary. Due to the containment of impacts to the allotment by fencing, lack of travel routes through the allotment, the majority of Denio creek watershed and Continental lake hydrology captured within the allotment boundary, the Pueblo Grazing Allotment proved the best selection for the CESA for this analysis.

Impacts from Past and Present Actions:

Based on ecological site potential, it is evident that vegetative communities within the assessment area have been altered, undoubtedly affecting wildlife populations. The impacts that have probably contributed the most to this alteration are livestock grazing, wildfire, recreation, agriculture and road construction. Information on wildlife populations prior to these activities is limited, but populations were probably greater in number and habitat more pristine and less fragmented.

Past actions until the 1970's have caused impacts to fishery habitats from livestock grazing. The impacts to the fishery habitats from these past actions, in general, have included: loss of streamside vegetation, increased sedimentation, increased stream channel width, and loss of undercut streambank habitat. From the 1970's through today, livestock grazing has been managed by allotment and with understanding the importance of the riparian vegetation. This has resulted in proper grazing management, which has helped improve fishery habitat within the cumulative assessment area. The present grazing management has reduced past fishery impacts. Past actions from road construction and recreation use have caused impacts to fishery habitats with increased sedimentation and loss of streamside vegetation at the road/stream crossings.

Impacts from RFFAs:

Impacts to vegetative communities, as discussed in Impacts from Past and Present Actions, are expected to continue into the future. Post-fire rehabilitation efforts, fuels reduction and noxious weed treatments would also likely continue. Future grazing practices should result in improved ecological condition which would be beneficial to wildlife. Other actions, such as recreation and wildfire would have localized effects on them.

The expected impacts to the fishery habitat from future livestock grazing would be expected to maintain existing habitat with the potential to be improving. Other future activities from road maintenance and recreation would continue to slightly impact the fishery habitat, depending on how close to the stream corridors the activities persist.

Cumulative Impacts:

No Action

All impacts, as discussed above would continue to influence wildlife habitat and populations. Implementation of this alternative would maintain the current grazing schedule that has operated since 1999. Implementing no change in grazing strategy may have, at best, a neutral effect on migratory birds, certain sensitive species, and wildlife in general. However, many wildlife species populations are already in decline and their habitat would continue to be lost, degraded, and fragmented. Therefore, when combined with cumulative effects like wildfire, continuing the current grazing strategy is more likely to have a, long-term effect that could hasten the population decline and habitat loss of these sensitive species.

Due to this Alternative being minimal on meeting the Standards of Rangeland Health, the expected impacts to the fishery habitat would be to maintain the existing habitat with the potential to slightly decrease.

Proposed Action

All impacts, as discussed in context for cumulative analysis, would continue to influence wildlife habitat and populations. Based on monitoring data within the allotment (Table 4-1), the Proposed Action combined with these impacts is expected to allow for overall maintenance or improvement of wildlife habitat, especially in the Denio Basin and Pueblo Mountain pastures. Resting these riparian areas in the Pueblo Mountain pasture through an every other year rest/rotation grazing schedule should substantially improve the soil and vegetation important to most wildlife species. Improving the soil and vegetation over the short term should lead to long term restoration in these riparian areas.

Due to the ability of the Proposed Action to meet the Standards of Rangeland Health, and the rest/rotation grazing schedule of the allotment, the impacts from this action on the fishery habitat would be maintain the existing habitat with the potential to slightly increase over an extended period of time.

Denio Creek Exclosure Alternative

All impacts, as discussed in context for cumulative analysis, would continue to influence wildlife habitat and populations. The fencing of Denio Creek would likely provide an opportunity to allow riparian soil and vegetation attributes in Denio Basin and Pueblo Mountain to recover enough to benefit sensitive migratory birds, greater sage-grouse, riparian nesting birds, the Columbia spotted frog, certain bats species, pygmy rabbits, and sensitive plant species (Nelson et al. 2011, Booth et al. 2012, Dalldorf et al. 2013). However, the fence may create additional problems for certain sensitive species. Combined with cumulative effects like wildfire, long term impacts on migratory birds, greater sage-grouse, riparian nesting birds, the Columbia spotted frog, and pygmy rabbits could be substantial. In addition, the increased pressure on the Continental pasture over 10 years could have essentially the same effects on the bleached sandhill skipper as previously described above for Alternative 1 cumulative effects.

Due to the ability of this alternative to meet the Standards of Rangeland Health, and the protection of Denio Creek in the Pueblo Mountain Pasture, the impacts from this action on the fishery habitat would be to increase over an extended period of time.

Reduced Grazing (Maximum Reduction) Alternative

All impacts, as discussed in context for cumulative analysis, would continue to influence wildlife habitat and populations. Combined with these impacts, the reduced grazing alternative is expected to result in overall improvement to wildlife habitat more quickly and to a greater extent than with the other alternatives. Implementation of this alternative would have the least impact when combined with cumulative impacts such as wildfire.

This alternative would allow for riparian areas on Denio Creek to approach their natural potential. The effects on fishery habitat are expected to result in overall improvement more quickly.

4.2.4 Social and Economic Values

Impacts from Past and Present Actions:

The economy in Humboldt County has historically and continues to be driven by the mining sector. Fluctuations in population and employment can typically be tied to this sector. Relative to other counties in Nevada, the farming sector has played a prominent role in the Humboldt County economy. That said, the farming sector has only supported about 5 percent of the jobs and labor income in the county. Nevertheless, agriculture has an important historical place in this county. As stated in a 1912 publication on the history of Nevada: “Humboldt County has a great variety of valley and mountain lands, suitable for agriculture, grazing, stock raising and mining” (Reid and Hunter, 1912). This demonstrates that the role of mining and agriculture in the county have been central to Humboldt County over at least the past century.

Impacts from RFFAs:

Given the reasonably foreseeable future actions described, no substantial changes to the Humboldt County economy and to the social framework of the county are anticipated over the next ten years.

An increase in recreation use does increase the potential for conflicts to arise between recreationist and ranchers permitted to graze on BLM administered public lands. BLM would continue to manage lands for multiple use and implement planning measures, if necessary, to address these conflicts.

Cumulative Impacts:

No Action

The no action alternative would maintain the same overall level of permitted grazing on the allotment. Therefore, the economic and social impacts would be expected to remain the same as described in Section 4.1.7 Social and Economics Values no new incremental impacts would be anticipated.

Proposed Action

The proposed action would maintain the same overall level of permitted grazing on the allotment. Therefore, the economic and social impacts would be expected to remain the same as described in Section 4.1.7 Social and Economics Values and no new incremental impacts would be anticipated.

Denio Creek Exclosure Alternative

The proposed alternative would maintain the same overall level of permitted grazing on the allotment. Therefore, the economic and social impacts would be expected to remain the same as described in section 4.1.7 Social and Economics Values and no new incremental impacts would be anticipated.

Reduced Grazing (Maximum Reduction) Alternative

The incremental impacts of the no grazing alternative on the economic and social conditions of the region would be minimal. With recreation use anticipated to increase,

this alternative would decrease the possible conflicts that would arise between recreationist and ranchers on this allotment.

4.2.5 Soils, Vegetation, Wetlands and Riparian Zones

Relevant CESA:

Relevant CESA for this analysis is the grazing allotment boundary. Due to the containment of impacts to the allotment by fencing, lack of travel routes through the allotment, the majority of Denio creek watershed and Continental lake hydrology captured within the allotment boundary, the Pueblo Grazing Allotment proved the best selection for the CESA for this analysis.

Impacts from Past and Present Actions:

Impacts to soils, vegetation, wetlands and riparian zones from the fires described above would have been minimal and short lived. Effects would have included temporary loss of vegetation and its associated ability to prevent soil erosion. After fire, these effects would be reduced and eliminated as vegetation recovered (on the order of 2-5 growing seasons). With that, impacts to these resources from fire are not present currently. Roads have led to the loss of vegetation (both upland and wetland/ riparian) and compaction of soil along the travel corridors, but this impact is likely negligible relative to the allotment as a whole. Increases erosion (via wind or water) has also likely been caused along travel corridors, but the effect has not been quantified and is expected to be minimal. Mining is not known to have had any major effects on these resources within the Pueblo Mountain Allotment. Agricultural and residential uses have caused major, but localized changes to the native vegetative communities through cultivation of “domesticated” species for financial or aesthetic purposes. Recreation impacts to these resources would occur from OHV use and the effects would fall under those described as part of the impacts from roads.

Impacts from RFFAs:

Those impacts associated with the past and present actions are likely to continue and minimal or no changes to soils, vegetation, wetlands and riparian zones would be expected. The only exception would be potential increases to the impacts on these resources from increased off road recreation travel in the area.

Cumulative Impacts:

No Action

Since the no action alternative would not be expected to cause any measureable net changes to Soils, vegetation, wetlands and riparian zones, there would be no cumulative impact to this resource.

Proposed Action

Due to the ability of the proposed action to meet the Standards of Rangeland Health, the effects from this action on soils, vegetation, wetlands and riparian zones would be countervailing to effects from the past, present, and reasonably foreseeable future actions.

Denio Creek Exclosure Alternative

Due to the ability of the Denio Creek exclosure alternative to meet the Standards of Rangeland Health, the effects from this action on soils, vegetation, wetlands and riparian zones would be countervailing to effects from the past, present, and reasonably foreseeable future actions.

Reduced Grazing (Maximum Reduction) Alternative

This alternative would allow for upland, wetland, and riparian vegetative communities to approach their natural potential. The effects on soils, vegetation, wetlands and riparian zones from this alternative would be countervailing to effects on water quality from the past, present, and reasonably foreseeable future actions.

4.2.6 Water Quality - Surface

Relevant CESA:

Relevant CESA for this analysis is the grazing allotment boundary. Due to the containment of impacts to the allotment by fencing, lack of travel routes through the allotment, the majority of Denio creek watershed and Continental lake hydrology captured within the allotment boundary, the Pueblo Grazing Allotment proved the best selection for the CESA for this analysis.

Impacts from Past and Present Actions:

Due to the size of the fires described above, their impacts to water quality would have been minimal and relatively short lived. Fire suppression activities can increase sediment loading locally where streams are crossed, active fire can cause local increases in surface water temperatures, and the loss of vegetation can lead to temporary increases of sediment (decreases soil stability) and nutrient loading (soot/ ash added to the water). Based on when they occurred these effects would no longer exist. Roads within the allotment can have impacts in two primary ways. Paved roads can lead to localized increases in pollutants (salts, oils, etc.) and unpaved roads can lead to erosion where streams are crossed. The locations of the paved roads in the allotment, in general, are not adjacent to water bodies and are in relatively flat areas. Therefore, any impacts to surface water would occur during rain events and the impacts would occur very close to the road surface. There are several locations where unpaved roads cross drainages in the allotment. Off road travel is generally limited and large scale erosional issues related to travel on these roads is not known to exist. Effects are limited to localized and short lived increases in sediment loading when stream channels are crossed. Mining activity in the allotment has caused no known impacts to surface water quality. Agricultural and residential activities would have similar impacts to surface water quality as roads except that the areal extent would be greater. Both activities can lead to the introduction or application of pollutants to the ground surface, including pesticides, herbicides, and fertilizers. Due to the topography transportation of these pollutants would be minimal and impacts to surface water quality would be limited to the areas adjacent to the application sites. Recreation impacts to surface water quality would occur from OHV use and the effects would fall under those described as part of the impacts from roads.

Impacts from RFFAs:

Those impacts associated with the past and present actions are likely to continue and minimal or no changes to water quality would be expected. The only exception would be potential increases to the impacts on water quality from increased off-road recreation travel in the area.

Cumulative Impacts:

No Action

Since the no action alternative would cause no changes to water quality, there would be no cumulative impact to this resource.

Proposed Action

Due to the ability of the proposed action to meet the Standards of Rangeland Health, the effects from this action on water quality would be countervailing to effects from the past, present, and reasonably foreseeable future actions.

Denio Creek Exclosure Alternative

Due to the ability of the Denio Creek exclosure alternative, to meet the Standards of Rangeland Health, the effects from this action on water quality would be countervailing to effects from the past, present, and reasonably foreseeable future actions.

Reduced Grazing (Maximum Reduction) Alternative

This alternative would allow for riparian areas (and the associated water quality) to approach their natural potential. The effects on water quality from this alternative would be countervailing to effects on water quality from the past, present, and reasonably foreseeable future actions.

4.2.7 Wilderness Study Area

Relevant CESA:

The relevant CESA for this analysis is the WSA boundary.

Impacts from Past and Present Actions:

The Pueblo Mountains WSA has been managed similar to wilderness under the Interim Management Policy until 2012, then under BLM Manual 6330, to protect their wilderness values until Congress decides to designate them as wilderness or releases them for other purposes. Impacts to these areas have included disturbance due to past mining activities, impacts from cattle grazing and associated management activities, and unauthorized motorized traffic. The aggregate effect of all these activities has been to lessen opportunities for solitude and a primitive or unconfined type of recreation and to detract from the naturalness of the area.

Impacts from RFFAs:

Other than the possible changes to the grazing allotment management proposed in this environmental assessment, there are no currently scheduled future actions relating to the wilderness resource. It is likely that grazing of cattle and associated impacts to wilderness would continue for the foreseeable future.

Cumulative Impacts:

No Action

The naturalness of the WSA would not be improved and wilderness values might see a gradual level of decline, particularly in riparian areas that are currently being impacted by heavy use.

Proposed Action

Under any level of grazing, including the proposed action, cumulative impacts would include some degradation of the wilderness values of naturalness and opportunities for solitude and primitive and/or unconfined types of recreational experiences. It is likely that the rate of degradation to these wilderness values would decrease somewhat under the proposed action due to changes proposed in livestock management.

Denio Creek Exclosure Alternative

The installation of an exclosure fence would incrementally add to the degradation of the naturalness of the area. Balanced against this impact is the protection the fence would provide to the riparian area, thereby alleviating and correcting impacts caused by past and present actions through improving vegetative communities and stream channel morphology and continue the protection against future potential use. This impact would be localized to the area of the exclosure but would add to the naturalness, to some degree, of the WSA as a whole.

Reduced Grazing (Maximum Reduction) Alternative

Reduction of livestock grazing would incrementally add to the naturalness of the assessed area and likewise incrementally improve opportunities for solitude and primitive/unconfined recreational experiences.

5.0 RECOMMENDED MITIGATION and MONITORING

Rangeland monitoring would be conducted by BLM Specialists. Specific rangeland monitoring studies may include cover studies, ecological condition studies, key forage plant method utilization transects, Cole browse, use pattern mapping, frequency trend, or observed apparent trend. Other monitoring along Denio Creek might include stream surveys, key species stubble height measurements, bank alteration measurements, water quality tests, and/or other studies. Noxious weed detection would be incorporated into monitoring activities.

6.0 TRIBES, INDIVIDUALS, ORGANIZATIONS, OR AGENCIES CONSULTED

6.1 Native American Consultation

The Winnemucca District Office mails an annual Consultation, Cooperation, and Coordination (CCC) Letter to individuals and organizations that have expressed an interest in rangeland management related actions. Those receiving the annual CCC letter have the opportunity to request from the Field Office more information regarding specific actions. The following

individuals/organizations have requested information on all actions regarding rangeland management in the Pueblo Mountain Allotment and are thus considered “interested publics”:

The following tribes were notified by letter on the grazing permit renewals, per the SHPO-BLM protocol, for 2011 and 2012: Battle Mountain Tribal Council, Cedarville Rancheria, Fallon Paiute and Shoshone Tribe, Fort Bidwell Indian Council, Fort McDermitt Paiute and Shoshone, Lovelock Paiute Tribe, Pyramid Lake Paiute Tribe, Reno-Sparks Indian Colony, Summit Lake Paiute Tribe, Susanville Rancheria, and Winnemucca Indian Colony.

6.2 Coordination and/or Consultation (Agencies)

United States Fish and Wildlife Service
Nevada Department of Wildlife
Oregon Department of Fish and Wildlife

6.3 Individuals and/or Organizations Consulted

Burns Oregon District Archeologist, Scott Thomas

6.4 Public Outreach/Involvement

Scoping:

On March 20, 2012 a scoping letter was sent to the entire mailing list for the Pueblo Mountain Allotment plus others who had expressed interest in the general area. On November 9, 2012 a letter was sent to the Nevada State Supervisor of the US Fish and Wildlife Service requesting a list of any federally listed, federally proposed, or current federal candidates that had been identified within the work area. On December 14 the response letter identified the greater sage-grouse as a candidate species.

Preliminary EA:

After review of the public comments on the EA, BLM grouped the comments into four categories:

1. Livestock Management;
2. Terms and Conditions;
3. Decision Making; and
4. Wildlife

A summary of each category and how the BLM addressed those categories follows:

1) Livestock Management:

Timing of grazing and the rotation system were questioned. The proposed grazing system is described in chapter 2 under the proposed action. A comment said that the BLM has been unable to meet objectives after 3 weeks of grazing within the Pueblo Mountain pasture so

how can we meet with 4 weeks of grazing?

- Based on input and comments received from the interested public, BLM has modified the proposed action by proposing a three week grazing period within the Pueblo Mountain pasture every other year. In addition, BLM has proposed to replace the gates in the pasture with cattleguards to assist with the issue of gates being left open by recreationists, hunters and other public land users.

Comments also raised concerns about the proposed grazing period within the Continental pasture

- Based on input and comments received from the interested public, BLM modified the proposed grazing schedule in the Continental pasture in years 4, 7 and 10 from 8/1 – 8/31 to the option of 7/16 -8/15 or 10/1-10/31 to better accommodate the flight time of the bleached sandhill skipper, which is a species of insect that is of concern to the Fish and Wildlife Service and BLM.

2) Terms and Conditions: One comment suggested that number 10 be expounded on to have more specific Terms and Conditions for an enclosure.

- Since the proposed action does not include construction of an enclosure, number 10 was not expounded on

3) Clarity was sought regarding livestock movement to private land was required after objectives had been met in the Pueblo Mountain pasture and recommended that it be required in order to assure impacts to LCT are minimized.

- Monitoring completed by the permittee is meant for the permittee to be proactive and aware of stubble height objectives and remove livestock from the area before objectives are exceeded. BLM would not rely on permittee monitoring alone but also on its monitoring data collected during and after the grazing season. If it is determined that there is an issue with the stubble height corrective actions shall be taken.

4) Decision Making: A comment recommended selection of the Denio Creek Enclosure or the Reduced Grazing alternative.

- The proposed action, which was modified after receiving comments from the interested public, is to graze the Pueblo Mountain pasture for three weeks every other year and replace the gates in this pasture with cattleguards. The proposed action also includes a shift in timing for grazing within the other pastures. The modified grazing schedule and cattleguards are meant to improve and protect Denio Creek, as was the intent of the Denio Creek enclosure alternative.

- 5) Wildlife: A comment suggested selection of grazing strategies that promote vegetation that supports nesting, brood-rearing, and winter habitats including maintenance or recovery of shrub and herbaceous cover and retain residual cover adequate to conceal sage-grouse nests and broods from predation, and plant communities that provide a diversity of plant and insect food sources.

- The alternatives analyzed present a grazing system that promotes vegetation that supports nesting, brood-rearing, and winter habitats including maintenance or recovery of shrub and herbaceous cover and retain residual cover adequate to conceal sage-grouse nests and broods from predation, and plant communities that provide a diversity of plant and insect food sources

In July of 2014 a wildfire burned approximately 5% of the Pueblo Mountain Allotment. As a result, a decision has been issued temporarily closing the affected portions of the allotment until vegetative objectives have been met. Once the objectives are met, it is expected that rangeland health will be substantially similar to conditions that existed when this analysis was prepared. At that time livestock will be authorized to graze in accordance with the proposed decision.

The following changes were made to the Environmental Assessment:

- Table 1: After receiving comments from the interested public and permittee, the proposed 10-year grazing permit was modified to reflect a three-week grazing period within the Pueblo Mountain Pasture and timing of use changes for the other pastures.
- In addition to changes in the grazing schedule, cattleguards are proposed to be installed at existing gates leading to and from the Pueblo Mountain pasture.
- Alternatives were added to the alternatives considered but eliminated from analysis section.
- Map #3 was updated to reflect the change in the proposed grazing schedule.
- Map #4 was added to show the locations of the proposed cattleguards
- Map numbers were modified to reflect the new map
- On the new map #8 the stream survey reach 8 was removed since it fell on private ground
- The public involvement section was updated to reflect the publication of the preliminary EA, a summary of comments received and how BLM addressed the comments
- Additional administrative edits were made throughout the document as needed to improve reader understanding of the alternatives and analysis.
- An additional sentence was added to the analysis of the Western yellow-billed cuckoo as a result of it's listing as a threatened species in October of 2014

7.0 LIST OF PREPARERS

7.1 BLM

Morgan Lawson	Project Lead; Rangeland Management Specialist
Robert Bunkall	GIS
Rob Burton	Vegetation; Soils
Mark Hall	Native American Religious Concerns
Aron King	Wetlands and Riparian Zones; Hydrology; Migratory Birds; T&E Species (Plants & Animals); Special Status Species (Plants & Animals); General Wildlife
Greg Lynch	Fisheries; T&E LCT
Peggy McGuckian	Cultural Resources; Paleontological Resources
Derek Messmer	Invasive, Non-native species (plants & animals)
Lynn Ricci	NEPA Coordinator
Zwaantje Rorex	Wilderness Study Areas; Lands with Wilderness Characteristics

7.2 Cooperating Agencies

Coordination and consultation efforts on this project were sufficient to address input by other agencies and governments. Therefore, no cooperating agency relationships were established.

8.0 REFERENCES

Bureau of Land Management

- 1979 Initial Wilderness Inventory. Bureau of Land Management
- 1980a Wilderness Study Area Decisions, Nevada BLM Intensive Wilderness Inventory
- 1980b Wilderness Review, Intensive Inventory – Final Decisions on 30 Selected Units in Southeast Oregon and Proposed Decisions on Other Intensively Inventoried Units in Oregon and Washington
- 1981 Paradise-Denio Grazing Environmental Impact Statement (Draft), p. 3-67
- 1984 Grazing Management Practices Manual H-4120-1
- 1991 Nevada State Wilderness Report
- 2001 Nevada Wilderness Study Area Notebook
- 2003 Soil Survey of Humboldt County Nevada, West Part
- 2004 The Southwest Regional Gap Analysis Project (SWReGAP)
- 2005 Winnemucca Resource Management Plan Socioeconomic Report
- 2006a Grazing Allotments GIS layer, Winnemucca District.
- 2006b Range Improvement Lines GIS layer, Winnemucca District.
- 2006c Range Improvement Points GIS layer, Winnemucca District.
- 2006d Roads GIS layer, Winnemucca District.
- 2006e Legacy Rehost (LR) 2000 database
- 2006f Fire History GIS layer, Winnemucca District.
- 2011 Nevada Department of Wildlife Bighorn Habitat, GIS Layer.
- 2011 Nevada Department of Wildlife Element Occurrences Point, GIS Layer.

- 2011 Nevada Department of Wildlife Mule Deer Habitat, GIS Layer.
 - 2011 Nevada Department of Wildlife Pronghorn, GIS Layer.
 - 2011 Nevada Department of Wildlife Raptor Nest Sites, GIS Layer.
 - 2011 Nevada Department of Wildlife Sage Grouse Habitat, GIS Layer.
 - 2011 Nevada Department of Wildlife Sage Grouse Leks, GIS Layer.
 - 2011 Nevada Natural Heritage Program Observation, GIS Layer.
 - 2011 Instruction Memorandum WO-IM-2011-154: Requirement to Conduct and Maintain Inventory Information for Wilderness Characteristics and to Consider Lands with Wilderness Characteristics in Land Use Plans
 - 2012 BLM Manual 6310 – Conducting Wilderness Characteristics Inventory
 - 2012b BLM Manual 6330 – Management of Wilderness Study Areas
- Burton, T.A., S.J. Smith, and E.R. Crowley. 2011. Riparian area management: Multiple indicator monitoring (MIM) of stream channels and streamside vegetation. Technical Reference 1737-23. BLM/OC/ST-10/033+1737. U.S. Department of the Interior, Bureau of Land Management, National Operations Center, Denver, CO. 155 pp.
- Calhoun, A.J. 1942. The biology of the black-spotted trout (*Salmo clarki henshawi*) (Gill and Jordan) in two Sierra Nevada lakes. Ph.D. dissertation. Stanford University, Palo Alto, California. 218 pp. [In U.S. Fish and Wildlife Service. 1995 Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*) recovery plan. Portland, Oregon.]
- Gregory, J.S., and B.L. Gamett. 2009. Cattle trampling of simulated Bull Trout redds. North American Journal of Fisheries Management 29:361-366.
- La Rivers, I. 1962. Fishes and fisheries of Nevada. Nevada State Fish and Game Commission. Reno, Nevada. 782 pp.
- Lea, T.N. 1968. Ecology of Lahontan cutthroat trout, *Salmo clarki henshawi*, in Independence Lake, California. M.S. Thesis. University of California, Berkeley, California. 95 pp. [In U.S. Fish and Wildlife Service. 1995 Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*) recovery plan. Portland, Oregon.]
- McAfee, W.R. 1966. Lahontan cutthroat trout. In A. Calhoun, editor. Inland fisheries management. California Department of Fish and Game, Sacramento, California. pp. 225-231. [In U.S. Fish and Wildlife Service. 1995 Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*) recovery plan. Portland, Oregon.]
- Moyle, P.B. 2002. Inland fishes of California. University of California Press, Berkeley, California. 502 pp.
- Platts, W.S. 1990. Managing fisheries and wildlife on rangelands grazed by livestock. Nevada Department of Wildlife.
- Roberts, B.C., and R.G. White. 1992. Effects of angler wading on survival of trout eggs and pre-emergent fry. North American Journal of Fisheries Management 12:450-459.

U.S. Department of the Interior. 2006. Riparian area management: Grazing management processes and strategies for riparian-wetland areas. Technical Reference 1737-20. Bureau of Land Management, National Science and Technology Center, Denver, CO. 105 pp.

Biological Soil Crusts: Ecology and Management, 2001. Interagency Technical Reference 1730-2. USDI/BLM, 110 Pp.).2001

United States Fish and Wildlife Service (USFWS); <http://ecos.fws.gov/ipac/>; 10-18-2013

NRCS's National Sage-Grouse Initiative.

(<http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/programs/farmbill/initiatives/?&cid=steldevb1027671>).

9.0 MAPS

Map 1: General Location of Pueblo Mountain Allotment

Map 2: Pueblo Mountain Allotment

Map 3: Proposed Action Grazing System

Map 4: Proposed Cattleguards

Map 5: Riparian fence location

Map 6: Existing Range Improvements

Map 7: Denio Creek

Map 8: 2012 Denio Creek Stream Survey Reaches

Map 9: Denio Creek Thermographs

Map 10: Denio Creek PFC

Map 11: Pueblo Mountain WSA

Map 12: Allotment Fire History